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WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

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(*Continued from page* 932.)

BLOOD DYSCRASIÆ—ANÆMIA.

THIS condition arises from various causes. It may be well to describe briefly what these are, before noticing how Nitrous oxide affects anæmic persons. Anæmia occurs in young persons who have outgrown their strength; it follows unhealthy modes of living, much night occupation, living in overheated rooms, and disregard for the necessities of nature, for due exercise, and a well chosen dietary. It frequently is determined at the onset of puberty in either sex. Again, anæmia commonly ensues upon illnesses whether acute, such as acute rheumatism, pneumonia, pleurisy, and so on; or chronic exhausting complaints viz., where a profuse discharge has taken place, such as in bone affections, chronic bronchitis, hæmorrhoids; after an attack of hæmorrhage anæmia follows, such hæmorrhage of course may ensue upon severe accidents, surgical precedure, bleeding from the stomach, (hæmatemesis); from the intestines, as a result of ulceration or bleeding piles; from the lungs, as in pneumonia, or phthisis; after child-birth when severe flooding has occurred anæmia is usually well marked and may persist for some time. Attacks of gastric catarrh, or more severe stomach affections, gastric ulcer, gastrodynia, etc., produce weakening and anæmia, through the constant vomiting to which they give rise.

A condition closely allied to simple anæmia is found in young women in whom the menstrual function is usually disordered—Chlorosis. The condition is recognised by a yellowy green colour which is present in the skin, giving the patient a peculiar pasty, unwholesome appearance. In chlorotic and anæmic persons there often is much difficulty in breathing, especially if excitement, or fear exist, and this may make the induction of narcosis somewhat prolonged. However, this is not by any means commonly the case, for I have found that anæmic persons usually become narcotised with extreme celerity by nitrous oxide but that the narcosis is transient, sometimes remarkably so, giving even a rapid operator hardly sufficient time to remove a single tooth. It is well to bear this in mind as such patients must not be promised too much. The anæmic have peculiar, functional affections of their hearts which often determine a want of regularity of rhythm, as well as defects alike in the nervous controlling apparatus and the cardiac muscle itself. This is due to the imperfect way in which the nervous system, and the muscular tissues are nourished by the blood. The blood being thin, and not having sufficient strength cannot nourish the tissues and hence these suffer. A want of regularity both of rhythm and force are commonly associated with anæmic conditions, and give rise to sensations of giddiness and faintness, and not infrequently to breathlessness. Over the cardiac area, especially at the base, loud soughing murmurs are developed, which are readily heard even by inexperienced stetoscopists, while in the large veins running from the head along the neck to enter the thorax, a loud buzzing hum—the *bruit de diable* is distinctly heard when the stetoscope is applied to the vein. These *hæmic murmurs* must of course be carefully distinguished from true cardiac murmurs the result of valvular disease, since while the latter denote organic disease, the former arise simply from functional derangement of the heart.

Unless the degree of anæmia is so pronounced as to have caused very marked bodily prostration and feebleness of the heart's action, nitrous oxide inhalation produces no unpleasant symptoms. In the various degrees of physical enfeeblement found as a result of progressive anæmia, I have occasionally, when the anæmia has been well marked, met with a subjective feeling of faintness not causing syncope, but nothing further. The more severe cases are seldom brought to the dentist's chair, their feebleness being unequal to the exertion of transport, and hence we are required to operate at the patient's own home. It is a wise precaution in this case to enjoin the recumbent, or semirecumbent posture, so that the heart has its work minimised and the brain is not rendered too anæmic. As in all conditions of bodily feebleness, severe anæmia demands our most watchful care, two contingencies being liable to occur—most commonly faintness, or even syncope, and cessation of respiration from interference with the medullary centres. The faintness and syncope will be detected by the pallor and failing pulse, the respiratory trouble by the lessened amplitude of the respiratory movements, and the diminution of the blast of expired air, judged by the hand placed against the expiration valve in the face piece. In these cases it is advisable, if anything beyond the extraction of an easy tooth is contemplated, to allow the gas to pass over ether, as in Clover's method, since the heart is thus stimulated, and more prolonged anæsthesia is obtained. I say, allow the gas to pass over ether, advisedly, because other methods which give undiluted ether vapour in succession to gas, are undesirable in the class of cases with which we are dealing.

It will be convenient to consider in this place certain forms of toxæmia with which we are liable to be brought in contact. In the subject of gout, chronic Bright's and hepatic disease, diabetes and its allied conditions, owing to the imperfect way in which the excretion is performed, there is a circulation of deleterious material in the blood, which materially interferes with due performance of the various functions of the heart, respiration and nervous system.

Both in chronic Bright's disease, and in gout, there is more or less advanced structional disease of the heart's substance as well as degenerative changes in the blood vessels. It is these changes in the muscular system which make the gouty and the subjects of Bright's disease, anxious cases for the anæsthetist, but the anxiety is in the main confined to occasions when chloroform, or ether have to be administered, for judging from the knowledge we possess of the action of nitrous oxide upon the renal vessels and secretion, there is little or no danger to be incurred by giving nitrous oxide to these persons. The interference with the vascular system is, I believe, too transitory to be likely to bring about lesions, nor have I seen any untoward results arise from nitrous oxide given in such cases. Advanced hepatic disease, although causing toxæmia, does not in any way contra-indicate the use of this anæsthetic.

Of course, in every blood dyscrasia, one would not only be decided by the known history of a particular form of ailment, but also by the evidence of its effects upon the general vigour and well-being of the individual. It may be said that renal affections are not likely to become within the cognisance of the administrator of nitrous oxide, and this is partly, although not entirely true. For if the complaint has made sufficient progress to render any apprehension of untoward results likely to ensue upon narcosis by nitrous oxide, it is usually made evident by the pinched, bloodless skin, and evident embarrassment to respiration occasioned by any unwonted exertion. In the advanced form of "gouty kidney" too, the finger placed lightly upon the radial artery will detect the hard inelastic pulse. In reply to questions, the patient will usually say the heart beats with unpleasant force, that he is "asthmatic" at times, and that his asthma is the development of late years. This form of disease is commonly a complaint of advanced middle age and occurs in persons who have had repeated attacks of podagra. The convulsions which may develope in the course of renal, hepatic disease, or of diabetes, are not to be feared as far as nitrous oxide is concerned.

There is, perhaps, more danger to be apprehended from the results of cardiac weakness and old pericarditis, conditions which may occur in the course of renal diseases. But I am quite sure that the danger is slight, provided the general enfeeblement is not too pronounced, and, is certainly less than would be incurred were cocaine to be used, or the patient subjected to the pain of an operation without being anæsthetised.

(*To be Continued*)

IMPLANTATION OF TEETH.*

By George Cunningham, b.a., d.m.d., l.d.s.

Definition.—By implantation is meant the drilling of artificial sockets in the maxillary bones and the insertion therein of natural teeth of suitable size and form. This operation which is essentially one of "yesterday," is often described as nothing new simply from failure to differentiate it from the cognate operations of replantation and transplantation.

Replantation consists in the replacement of a tooth which has been extracted or dislocated in the alveolar socket of the same patient, while by transplantation is meant the extraction of a tooth from the alveolar socket of one person and its replacement by a similar tooth extracted from another. The conditions and circumstances under which these two operations are undertaken differ in some very important details from the operation of implantation. "In replantation, as this operation is usually performed, the parts, that is the pericemental membrane, the apex of the root and the alveolar process immediately surrounding these, are highly inflamed, in a state of disease with pus either already formed or forming at the end of the root, and the operation is undertaken with a view to relieving or aborting an alveolar abscess. The portion of the diseased apex is then cut off and the tooth is forced back into the cavity. Here we have a diseased root thrust back into a diseased socket. In transplantntion there is a healthy tooth, but it is usually made to take the place of a miserable old diseased root that has been growing and festering in a diseased socket for years. The diseased root is pulled out, but is the disease in the surrounding alveolus extracted with it? In implantation we have a healthy root in a healthy socket, and therefore the factors that tend to the destruction of the root in replantation and transplantation are not present and therefore not operative in implantation."

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* A paper read at the Annual General meeting of the British Dental Association.

Dr. Weld in the chapter he contributes on Replantation and Transplantation of the Teeth, to the "American System of Dental Surgery," points out that this argument, however, hardly holds good as to those replantations after the attachment of artificial crowns cited in his paper, in nearly all of which cases both roots and sockets were healthy, while ultimate failure was the result of all.

Without endorsing Dr. Younger's contention that the factors which tend to the destruction of the root in replantation and transplantation are necessarily absent in implantation, we must admit that the conditions and the circumstances are not identical, and that the new operation merits careful and scientific investigation at our hands.

History.—In the "American System of Dental Surgery," you will read that Dr. Younger first performed this operation in 1881. This is far from being correct; the operation referred to was simply one of transplantation. Dr. Younger's own account is as follows:—"My former practice (in transplantation), when I found a root was too long or too wide for a socket, was to cut off the apical extremity or shave off from the surface of the root the necessary quantity to insure a fit: but so often the best portion of the pericementum was in that way removed, that I tried deepening or widening the cavity, as the case required, often cutting freely into the bone in order to save all possible of this valuable tissue. I found that adhesion took place in this portion as perfectly as in the unbroached. The consideration of this led me to the grand conclusion, that *artificial sockets could be drilled into the bone itself and teeth planted therein as successfully as into the natural cavities.*

"My first operation of this nature was reported to the California State Dental Association, in August last (1885), and its success was witnessed by them several weeks after its performance. On June 17th, 1885, Miss Ward, a young lady of twenty-four, presented herself. She had lost the left superior lateral incisor, root and all, four years previously and had been wearing, as a substitute, an artificial tooth on a rubber plate. The collapse of the gum, consequent on the absorption of the alveolus was so great and the exposure of the gum so much, in conversation and especially in smiling, that the falsity of the denture was immediately recognized and was an object of great distress to her. As it was impossible, for the reasons just given, to produce an artificial substitute that would look natural, I determined on the following operation, one that I had for a long time contemplated and which, though satisfied in my mind, in consequence of certain observations and experiments, would be successful, seemed so opposed to scientific thought and the established rules of surgery, that I had not before screwed up my courage sufficiently to attempt it. I took a corresponding lateral from a young man, which, from its awkward position was disfiguring his mouth, and prepared it as I do all teeth I use in transplantation, viz., removed the pulp, filled the pulp-chamber and root-canal with Hill's stopping, and finished the apex with gold. The tooth was then placed in water of the temperature 100° Fahrenheit, to cleanse it of all blood and impurities, and allowed to remain for about one hour. It was then placed in a batch of bichloride of mercury, 2 parts to 1,000 water, for about fifteen minutes, to disinfect it. The tooth being now ready, I turned my attention to the patient. I cut a hole in the gum a little less than the diameter of the root to be inserted. I then took on ordinary flat, angular-edged drill, and drilled into the bone in the line of direction the tooth was to occupy. When fully deep enough, I widened the cavity and formed the socket with a cone-shaped burr. When I found by the trial that the cavity would receive the tooth perfectly, I carefully washed and sponged it out, in order to remove every particle of detached bone, first with warm water, then with cold, and lastly with the bi-chloride solution already referred to, and when the bleeding had ceased I introduced the tooth and kept it in position by delicate silk ligatures attached to the central incisor on the right, and to the canine on the left. There resulted a little swelling over the root, which remained a few days and then gradually disappeared.

" An accident to the gum occurred during the development of the socket. Just as the drill touched the surface of the bone, the young lady jerked her head back, which caused the instrument to slip forward and through the gum, making a triangular-shaped gash of fully an eighth of an inch in length. Before the tooth was inserted the edges of this cut were brought carefully together and retained in contact by delicate silk sutures. On the fourth day the sutures were removed, and no mark was apparent to tell of the lesion that had existed. In twelve days I removed the ligatures from the tooth and found it well attached. I then removed the threads to fix the tooth while the callus formed round the root. About three weeks afterwards, the gum being free from every sign of irritation and the tooth comparatively firm, and desiring to improve the position of the right superior central and lateral, I had to pass the ligatures around the new tooth. This, unfortunately, set up a slight inflammatory action, and an epulis formed a few days after, and a little discharge of matter took place. I thereupon moved the ligatures and treated with injections of iodine. When last seen the epulis had nearly disappeared, the surrounding gum had resumed its normal look, the tooth become firm in its position, and was performing its functions in common with its fellow teeth as though it had never been a stranger in the mouth.

"This case was examined by several physicians, and by the members of the California State Dental Association, who, with the exception of two, pronounced the operation a great success. These two gentlemen were not thoroughly satisfied with its stability because only of the epulis that had formed."

On the 15th August and 5th September, 1885, he operated for the second patient, aged thirty-five. In this case the superior bicuspids had been lost about twenty years during which time she had worn artificial dentures. The lady expressed herself with regard to the operation as follows: "'When I think that for twenty long years I have had to wear a nasty old plate, and now I have instead natural teeth growing in my mouth, I feel so happy that I cannot express myself."

The first accounts of Dr. Younger's method of implantation contained more or less facetious allusions to his keeping a stock of live teeth in the combs of innumerable roosters. The incredulous if not the absolutely scoffing journalist thereupon treated the affair as a huge joke, and drew vivid pictures of the Californian Cocks' Comb Tooth Supply Association, Limited. From Dr. Younger's own publication, the fowl facts seem to be as follows :—In his endeavour to prove that the operation of transplantation could be made a success, he determined to repeat the experiment of John Hunter who, to test the vitality of the pericementum, planted a cock's comb, with this difference, that he took the precaution of removing the pulp and filling the pulp chamber and root canal with gutta percha (Hill's stopping). To prevent any trouble from decomposition of the pulp, the tooth was well cleansed in warm water and dipped into a disinfecting solution. The success of the experiment satisfied him that the "pericementum would attach itself to any vascular body, and that if properly planted in a fresh socket it would attach itself and form a living union with the surrounding tissues. The great and only difficulty I had to contend with was the procurement of teeth at the time they were needed. At last a way suggested itself. I applied to my dental friends for whatever good teeth or roots the exigences of cases required them to extract. The experiment of Hunter and my own experience had taught me that teeth could be kept alive indefinitely in cocks' combs. But could they be transferred to the human mouth again and made to grow there? I concluded they could, and my first experiment verified my conclusion. On November 28th, 1882, a bicuspid that had been in the cock's comb for ten days was transferred to the mouth of a gentleman, where it fastened itself as if there had been no gallinaceous period in its existence."

Dr. Younger, in his first paper, gives an account of his first seven cases of implantation, but no mention whatever is made of the teeth having passed through an intermediate stage in the comb of the cock. Where the history of the scion tooth is given at all it appears to have been out of the mouth only a few hours, and sometimes only the time necessary for its adequate preparation.

In July, 1886, Dr. Younger read his second paper on "Implantation of Teeth and Pericemental Life," before the California State Dental Association. In it he announces that since the publication of his first paper on "Transplantation of Teeth into Natural and Artificial Sockets," he had made some discoveries which had perhaps best be described in his own words, and more especially so since the original communication are inaccessible to most readers on this side of the Atlantic.

"I have made a discovery in regard to the vitality of the pericementum, that is even more startling than the success of the operation of implantation itself. In the pamphlet I recommended the use of cocks' combs as a means of preserving the vitality of the peridental membrane, and also mentioned that in two instances the life of this membrane had been preserved for over fifty hours in tepid water. I now, however, have to report a case—one of several—which proves that these means are not at all necessary to preserve the vitality of this, the most wonderful tissue in the human body, that this vitality of the pericementum is marvellous, and that it may be as tenacious as that inherent in the seeds of plants.

"In the early part of March, 1886, Mrs. Dr. H. G. Blankman, the wife of one of the pioneer dentists of this coast, brought me a bicuspid that had been extracted at her solicitation, in Sacramento, on the 31st day of January, 1885, in the belief that it was the seat of a neuralgic pain which had been the cause of great anguish to her. This tooth, brought to me after this long lapse of time, had in the meanwhile been carried about in her portemonnaie, stowed away in her jewel case and shuffled about in her bureau drawer. And this tooth she wanted replanted in her jaw! My first impulse was to laugh, my next to argue with her about the impossibility of success of such a operation, explaining to her that it was due only to the vitality of the membrane covering the root that the operation owed its success; that, without this living membrane, the tooth was as impossible of attachment as so much bare ivory or porcelain, and that while I had succeeded in keeping this membrane alive for over two days, it was by constant immersion in warm water and a blood temperature; but that the pericementum of this tooth was, as she herself could see, as dry and shrivelled as parchmont, and as devoid of life.

"Just as I had persuaded her of the impossibility of success, there flashed through my mind a passage in John Bell's work on the 'Anatomy and Physiology of the Human Body,' that I had lately read, which awoke the suggestion that success in implanting that tooth was, after all, possible.

"This eminent surgeon, in criticising an article by the famous John Hunter, says:—'How can such vitality exist independently of a circulation? But there are not wanting examples of an obscure and low degree of life existing in animals' ova, or seeds, for seasons without circulation; and if for seasons, why not for a term of life?'

"While this passage did not bear directly on the subject in question, it somehow awoke a train of thought that led me to the conclusion that in that dry, shrivelled membrane, there possibly lay lurking a dormant life, which under favourable conditions would rouse its energies and make the tooth enclosed once more a living, useful organ.

"I have proved that the peridental membrane possessed a wonderful tenacity of life in at least two instances, where, after it had been removed from all life-giving connection for fifty-two hours, it was as vigorous in forming attachments as though it had been planted immediately after removal. I therefore reasoned with myself, if this peridental membrane preserves a vitality unimpared for fifty-two hours, why not for so many weeks or months? So I said, 'Mrs. Blankman, the idea has just occurred to me that what you want done is, perhaps, possible.' And I explained the cause of this revolution of opinion, as she is not only a brave but a very intelligant woman, and continuing, said:—'I will perform this operation as an experiment, to test the vitality of the pericementum; for, though I have no positive expectation, I have a hope of success.' So on the 11th of last March, in the presence of, and with the assistance of Dr. Alexander Warner, who was acquainted with all the circumstances of the case, I drilled a socket between the first left superior bicuspid and first molar, and after soaking the tooth in water—temperature 120 degs. Fahr.—for twenty-five minutes, to soften the membrane, restored to the jaw that which it had been deprived of just thirteen months and eleven days before.

"As the distal aspect of the tooth was perfect, and the approximal not, I turned the tooth, thereby much improving the original appearance of that portion of the mouth. When the operation was finished, the tooth was found so firmly fixed in the socket that retaining ligatures were not applied, and union took place as rapidly and as thoroughly as if it had been a fresh tooth.

"The tooth retaining this firmness, and no swelling nor pain ensuing, the lady commenced eating with it, and at the end of twelve days became so careless in the use of the tooth, that she bit a hard crust of French bread with it. This was too much; the tooth received a wrench which loosened it and caused the gum to bleed profusely. Next morning she hurried to the office, and with tears in her eyes, narrated the accident. I found the tooth quite loose but not dropping, and the gum on the palatine surface swollen and with the evidence of having bled at the margin.

"In my heart I was glad the accident had happened, for to me it was a test of the question whether the retention of the tooth was due simply to the nice adaptation of the walls of the socket to the root of the tooth, and therefore only mechanical, or whether it was really due to awakened life in the peridental membrane, and consequent vital connection with the living environment of gum and alveolar substance.

"If mechanical, I argued, the irritation that has been set up around it, especially in its present loose condition, will cause its expulsion; but if vital, it will be retained and become firm again. I therefore did not seek to retain it in place by any ligature, but simply painted the gum with tincture of iodine, and cautioned her not to chew on that side until I gave her permission. In one week all marks of the accident had passed away, the tooth became again firmly fixed, and remains at the present moment as solid as a rock. I have tried, since then, to pass a delicate instrument, the point of which had been flattened for the purpose, between the gum and the tooth, but the act gave as much pain, and the instrument met with as much resistance, as in the tissues surrounding the teeth that had never been disturbed in their sockets; all of which clearly proves, that the pericementum of that tooth, dry and shrivelled as it was, had during these long months of absence from any life-supporting substance, tossed about from place to place, from pocket and purse to casket and drawer, preserved a vitality as fresh and vigorous as when it was removed from the place in which it grew.

"I am happy to say, that Mrs. Blankman has kindly consented, in the interest of science, to present herself to you this afternoon in order that you may examine this tooth and satisfy yourselves by personal and thorough examination, as to the success of the operation. And I want each and every one of you gentlemen to test in every way that your ingenuity may suggest, short of extraction, the statement I have made, that vital connection has been established between the tooth and the walls of the socket, as perfect as that of the other teeth that have grown there and never been tampered with. I have since tried implanting teeth which have been extracted for weeks and months, with equal success, proving the wonderful tenacity of life of the peridental membrane.

"The question now to my mind is :—'When does the pericementum die ?'

"In consequence of these experiments, and the equal success of implantation of long-extracted teeth with that of fresh ones, I have discarded, as unnecessary, the warm water and the comb of the troublesome cock. I now simply lay the teeth aside in a clean, cool, dry place, and prepare and use them as I want them."

As is not unusual when a new operation is brought prominently into notice, a certain number of claimants arise to assert their rights to priority as discoverers of the same. Thus it is said that implantation was first practised by Dr. Mitscherlich of Germany. As far as I can gather from his monograph, he transplanted teeth from the corpse and even inserted specially prepared artificial teeth into recently vacated sockets. No mention whatever occurs of any artificial socket having been made. The term implantation is frequently used in this as well as in papers by other authors, but always as synonymous with replantation or transplantation. Herr Witzel and Professor Sauer are also accredited with having performed the operation of implantation prior to August, 1881, and with having reported the same at the meeting of the Central Association of Dentists in Germany. Dr. Bing of Paris and Dr. Parmly Brown also claim to have performed the operation of implantation some twelve or more years ago.

However that may be, it is certain that to Dr. Younger alone belongs the entire and sole credit of bringing the operation forward in such a way and with such enthusiasm, that it has quickly resulted in its being included in the category of practical dental orperations.

(*To be continued.*)

THE CHAIR OF DENTAL MECHANICS AT THE LONDON SCHOOL OF DENTAL SURGERY.—Mr. David Hepburn, whose connexion with his school now takes us back a long way, has accepted the chair, left vacant by the resignation of Dr. Joseph Walker. The election has been a very popular one, and seems likely to add fresh laurels to one of the most deservedly popular men upon the staff of the Dental Hospital of London.

FRACTURES OF THE JAWS AND THEIR TREATMENT.*

By F. A. Harsant, L.D.S.

Mr. President and Gentlemen,

I must commence this evening by offering you an apology. When the programme was being prepared for the coming year, I rather rashly agreed to bring the subject of micro-organisms before the notice of this Society. On reflection, however, I came to the conclusion, the subject of Fractures of the Jaws was one more interesting and more practically useful to us as Dental Students, and future dental practitioners. That being so, I invite you to consider with me, to-night, the main points in the diagnosis and treatment of Fracture of the Jaws.

It has been, is, and always will be, I am afraid, a vexed question, among those who practise our branch of the science and art of surgery, as to the limit of our sphere of operations. Some hold that we ought to confine ourselves to operations strictly concerning the teeth, and would like to draw a line along the alveolar border, and bid us go thus far and no farther. Others again, maintain that it is quite within the province of the dental surgeon to perform operations—like cleft palate—which though not strictly dental, are best undertaken by one accustomed to work in the confined space of the oral cavity. However that may be, I expect there will be few here, who will not consider the Dental Surgeon to be the right man to treat cases of fracture of the Jaws.

I am sure that in the event of our being unfortunate enough to sustain a fracture of our own jaw, we should prefer to go to a dental surgeon, rather than trust ourselves to the tender mercies of a general practitioner. Even for those who have had a careful training in the treatment of dental lesions, and have attained in no small degree that delicate power of manipulation which is so characteristic of the dental surgeon, the making and application of a Hammond splint is by no means easy.

Nevertheless, we should all be on the look out for cases, and should snap them up when we get the chance. For besides the practical gain in operative skill, which we get in treating a case, and beyond the moral good it does us to know our own weaknesses, lies the fact that fractures are by no means uncommon, and we may be called to treat a case at any time.

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* A Paper read before the Students' Society of the London Dental Hospital.

For though patients usually go to a doctor first, the latter will generally call in the assistance of a dental surgeon, and he will think little of one whose knowledge goes no further than tooth plugging, and who, when put to a less limited test is found wanting. Thus having indicated that it is our duty to be *au fait* in the treatment of this class of injury, we will pass on to consider the lesion more in detail.

The subject before us naturally divides itself into two—Treatment of Fracture of (1) the lower, and (2) of the upper jaw. We with take the lower jaw first, because fractures of this bone are much more common than those of the upper, and the treatment is more of a specially dental character.

The causes of fracture of the lower jaw are various, and are usually instances of direct violence. Among the most common are—kicks received from horses, falls from a height on to the chin, and blows from the fist. Then there is the fear people have of their jaw being broken during the extraction of a tooth. There may have been some ground for this in the days of the blacksmith dentist, and the barbarous key, but we may hope that in the future this must be omitted from the list of the causes of fracture, and the dread of its occurrence be classed, with the fear of ghosts, as a relic of the dark ages. Among other causes may be mentioned the vibration from a pistol discharged in the mouth, and a curious case is related by Mr. Christopher Heath, where fracture of the neck of the condyle was produced by a violent fit of coughing in an old man of seventy.

The position of the fracture of course varies, but will naturally be at the spot least able to stand the force applied. The weakest spot of the body of the jaw is generally in the region of the canine, for here the depth of the canine socket detracts from the strength of the jaw. This then is the usual spot for fractures of the body to occur. In other cases the previous removal of a tooth at any point, and the subsequent absorption consequent on the loss of the organ, may have rendered this the weakest spot, and the jaw may part at this point. So that the body may be fractured at any point of its surface from the symphysis to the angle. The fracture may also run horizontally, cutting off from the bone beneath a portion of alveolus with the sockets of several teeth.

Fractures may also occur in the ascending ramus of the jaw. This does not take place unless some great violence has been done to the patient, for the position of the ramus, situated as it is, beneath a pad of muscle, protects it from ordinary injury.

Another position where fracture may occur is, at the neck of the condyle. Though this is comparitively rare, it is very difficult to deal with, on account of the position of the part.

There remains one other seat of fracture, and that is across the base of the coronoid process, thus cutting off the attachment of the powerful temporal muscle, and losing its valuable aid in mastication.

The injury may be of several kinds. There may be a single fracture, either in the centre or on one side, or there may be a double fracture either symmetrical, or both on one side of the mouth, or again the fracture may be comminuted, that is, the bone may be broken in several places.

Viewed surgically the fracture may be of two kinds—simple and compound.

In the body the injury is almost invariably of the second class. This is to be explained by the fact that the gum is very dense and unyielding, and is bound down to the bone, so that it is difficult to break the one without rupturing the other. In the ramus and neck on the other hand, the fracture is usually simple, for here the bone is covered by muscles which remain intact, and cover up the lesion from the air.

The diagnosis of these cases is usually easy to make, the symptoms being obvious. The patient feels pain, and has more or less swelling of the face. The œdematous condition of the parts around sometimes goes on to suppuration, so that the patient will have an abscess opening beneath the chin. Then there is usually some salivation, the saliva dribbling from the mouth in spite of the patient's efforts to control it. This is owing to a sympathetic hypersecretion of the salivary glands. The patient is very often unable to shut his mouth, owing to the displacement of the fragments, and on looking into the mouth this will be easily noted, and will clear up the diagnosis at once. The disturbance of the correct line of the teeth will be enough to tell a dentist at a glance what is the matter.

Mr. Newland Pedley has very kindly lent me some models of cases which have occurred in his practice at Guy's Hospital, and which illustrate very well the various points to which I refer. This model marked E shows the displacement due to fracture.

But should the displacement not be so very obvious, the matter can be settled by manipulation. The surgeon should grasp the jaw on either side of the suspected spot between his fore-finger and thumb, and he will then be able to move one piece on the other and to experience the feeling of crepitus.

The diagnosis of fracture of the neck of the condyle is often very difficult. The patient feels pains and an inability to use the jaw as freely as before. The condyle is drawn forward on the eminentia articularis, and the jaw falls over to the ide of the fracture.

With regard to the prognosis. If the patient be fairly healthy the case may be expected to end well, and in a short time ; and though the patient be in a very dilapidated state at the time of presenting himself for treatment, it is wonderful how soon he will recover when the part is given rest by being put up in a splint. For I am sure, when we come to think of it, the feeling of misery engendered by the inability to eat or sleep properly, together with the discomfort occasioned by the continual flow of saliva is enough to make even old King Cole take his pleasure sorrowfully.

The time taken for treatment varies with the case. The average time for a splint to be worn is six weeks, to ensure the fracture being firmly united.

Occasionally, however, the cases do not unite as rapidly as they should, but linger on in a very inert way, and may even want a little freshening up before they will heal. This is especially the case with old people. These cases of delayed union may come all right in the end, or they may result in one of those complication, of fracture, ligamentous union, or no union. For though cases usually unite rapidly, there may arise conditions which considerably handicap the process of healing, or arrest it altogether. Foremost among these causes is necrosis of the bone around the seat of fracture. The blood supply being deficient, or too inferior for the nutrition of the bone, this latter dies, and breaks down into pus, which pus may escape at the seat of injury, or may burrow and find exit beneath the chin, forming suppurating sinuses which are difficult to heal. The effect of this is that the teeth on each side of the fracture get loose and come out, and the ends of the bone are absorbed, thus leaving a space. If now the parts be brought into opposition and the process of repair set in, the result will be that the jaw is reduced in its arch. This is a common cause of permanent deformity after fracture. Nor do I see that it can be remedied, for if the parts be not brought together no cure at all will be effected. Still, we should not be in a hurry to do this, for the bone may be restored.

Sometimes instead of the fracture being repaired by well-formed and calcified tissue it is only united by connective tissue. If this is the case, the fragments are more or less moveable on each other, though not to the same extent as before union took place at all. This ligamentous union, or "false joint" as it is called, is very inconvenient when occurring in the body of the jaw, as the patient loses the power of mastication to a great extent. When it occurs in the ramus it is of less consequence, as it then only does the work of the Temporo-Maxillary joint. This latter condition is artificially procured, and permanently maintained in Esmarch's operation for closure of the jaws.

If a case be left for some time without treatment the parts may be fixed in a wrong position, and a deformity produced which is undesirable. The only way to treat this is to saw the jaw through at the line of fracture, and to treat the case as though the fracture had recently occurred. It may be found after a long course of treatment that the fracture is in the same condition as when the treatment commenced. The cause of this is usually to be looked for in the presence of necrosis. It may also be due to the fact of a splint being put on which does not afford a rigid support for the jaw, but which allows the pieces to move on each other.

One should be careful in putting on a Hammond splint to see that when on, the parts are quite fixed. But cases of non-union do also occur where the fault does not lie with the operator, and occasionally jaws have been known to join up after the splint has been removed, though there was no attempt at union while the treatment was being proceeded with.

On considering the position and contents of the inferior dental canal one would expect to find that complicating lesions of the inferior dental artery and nerve would be fairly common. This is not the case, however. It is rare to get any serious hæmorrhage, though, it has been known, and an instance occurred, not long ago, of death from hæmorrhage of inferior dental artery ruptured at the time of the fracture. It is sometimes necessary to plug the patent ends of the canal with ivory pegs.

In the same way, it is very rare to get any serious nerve trouble. However, instances of more or less complete paralysis have been recorded.

We will now pass on to the consideration of the treatment of fractures.

The modes of treatment are various, though the objects aimed at and the main indications are the same. The surgeon wishes first to reduce the fracture, that is, to replace the fragments in the same relation, to each other and the surrounding parts, as they held before the accident. Having done so, he aims at keeping them in a state of absolute rest, so that the process of healing can go on undisturbed. Lastly, he must leave a ready means of approach to the seat of fracture, for the purpose of rinsing with antiseptic lotions to keep the part clean and healthy, and form an exit for discharges. Then having placed the patient in a favourable condition nature will do the rest.

The methods of treatment may be divided into two classes.

1. Appliances made use of outside the mouth, and 2, those used inside.

Among external appliances the simplest is the bandage. This is of several forms, one of the best and most easily made is in the following way: A piece of bandage is taken, and a slit made in the centre, about three inches long. The bandage is then slit down from either end till the lateral slits so made almost reach the central slit. This last is placed opposite to the patient's chin and the ends tied in the following manner: The lower pair are tied up over the vertex of the skull, and the upper pair are tied behind the occiput, the bandage passing below the ear. These bands are now connected by a piece passing vertically down to the occiput. Another form of bandage is Hamilton's. In this there is a vertical band passing from below the jaw to the crown of the head, and passing through a transverse band which runs horizontally round the head from the forehead to the occiput. There are other bandages which I need not describe now. As aids to the bandage, the gutta-percha or pasteboard splint is very useful. These are moulded to the jaw and help to support it.

In some few simple cases where there is little or no displacement of the fragments, and where there is a condition of bite which will prevent slipping of the parts, this may be all that is needed. But even if this be the case there is still the grave objection that the patient's jaws are fixed so that he cannot speak or masticate, and no proper exit can be left for discharges. And then the bandages are never perfectly rigid, but soon get loose and give a certain amount of play to the fragments. This method of treatment is the one in vogue with ordinary medical men, and commends itself to them for its simplicity. But from a specialist we expect something more elaborate and effectual than those rough and ready methods which may serve on the battle-field, but which are at best very imperfect. Dr. Ward Cousins, of Portsmouth, has recently introduced an outside splint which he has found useful in fractures of the condyle, and double fracture of the body. It consists essentially of an adjustable form of bandage, and though it may be an improvement on the ordinary form of bandage, it shares in common with all external appliances the disadvantage of the patient's mouth having to be kept shut ; and it is in my opinion inferior to a Hammond or a Hayward splint.

Of apparatus used within the mouth, the simplest is the ligature applied to the teeth. This is a very old method, and has been practiced from the earliest times. Nevertheless, it is objectionable from its tendency to cause the teeth to loosen and fall out. I have found it useful, however, in cases where there is little displacement, to hold the parts in position while an impression was taken, thus obviating the otherwise necessary operation of sawing the model through and re-adjusting it. A modification of the ligature is to drill holes through the bone on each side of the fracture, and wire the fragments together. This has been improved on by Mr. Wheelhouse. He passes flat-headed metal pins through holes drilled in the bone. The sharp ends, after being passed thro' the holes are bent away from the fracture. The ends of the pins are then wired together, thus holding the fragments tightly.

We now come to the consideration of splints, of which there are many different kinds. Perhaps the first to be mentioned should be the gutta-percha splint. It is made by warming a roll of gutta-percha and pressing it over the lower teeth and letting the patient bite on it. Dr. St. Geo.

Elliot speaks highly of this form for urgent cases, from experience gained in the American war.

Then there are various forms of mechanical contrivances, very formidable in appearance, which have been introduced from time to time. They go by the names of their introducers, as the Bush, Lonsdale, Hill, &c.

Dr. Gunning has introduced a form of splint which has proved very useful, and which may fairly claim the second place in the list. It is an interdental splint fixing the relation of the lower to the upper jaw. It is made in the following way:—Impressions of the jaws, both upper and lower are taken, and the models cast in plaster. The lower model is then sawn through, and a V shaped piece cut out. The fragments are then adjusted to the upper model, fixed with wax to hold them temporarily, and sunk in a fresh bed of plaster. Thus we have a corrected model of the lower jaw. To this model the splint is made. A wax dummy is built up capping the teeth all round and overlapping the alveolar border. This is done in both jaws, and the two connected by pillars of wax, leaving spaces between the pillars. The dummy is then trimmed up and reproduced in vulcanite. The splint having been made, holes are drilled, leading from the buccal surface to the teeth. These are to allow for syringing out the parts. The splint can be put in the mouth and a bandage put on ; or it may be left free. Sometimes holes are drilled in the lower half of the plate, and wires passed between the teeth ; thus binding the splint down to the lower jaw. The splint which I have here is one which has been in use, and has successfully accomplished its purpose. It was in position for 7 weeks.

Mr. Hayward has introduced a valuable modification of the last splint, instead of using the upper jaw as a support, he relies on an opposing pressure beneath the chin. He manages it in this way : Having struck up a plate to cap the teeth of the corrected model, arms are soldered on to the plate in the bicuspid region. The handle of an old excavator serves very well for the arms. These arms pass out at the angle of the mouth, and are then bent back and pass to the angle of the jaw. A piece of woed is placed below the jaw, and this and the arms are bound together by bandages.

Sometimes the plate is made loose, and the space filled up by putting in a little gutta-percha before pressing the splint home.

Mr. N. Kingsley has introduced a similar splint, but made in vulcanite. The advantage of this over the Gunning is that the patient can freely open his mouth, and can use the top of the splint for mastication. It has the drawback, however, of being rather unsightly.

Leaving the region of interdental splints we come to one which is facile princeps, the one introduced by Mr. Hammond. This is a wire splint, and for cleanliness, comfort, and efficiency, it knows no rival. Of course, its domain is limited. There are cases where it cannot be used, for instance, where there are few teeth standing, or where the fracture is far back, and it is necessary to fix the relation of the lower to the upper jaw. Still the Hammond splint admits of a very wide application, and it is undoubtedly *the* splint in cases where a fair support can be obtained from the surrounding teeth. It is made in the following way :—

A model is taken and corrected in the way described above. Then a piece of wire is bent up to fit the arch, both outside and in, and the ends soldered. In private practice, silver wire is best, but turned iron wire is very useful as it does not resist, some surgeons use ordinary piano wire. I have here a splint in position on the model. (The jaw was sawn through for the purpose of removing a malignant growth from the region marked by the letter E. The splint was made before and put on just after the operation.)

Having the splint made, the next step is to put it on. This is sometimes difficult, but the fragments can be held together by an assistant while the splint is slipped over the teeth. The next step is to take some lengths of fine binding wire, cut sharp and pass them between the teeth thus :—The wire is passed from above the external arch of the splint downward and inwards, between the necks of the teeth so as to emerge below the lingual bar of the splint. It is then bent up and passed back in a similar manner through the next space. Thus each wire embraces a tooth. The ends of the wires are twisted tight, and bent out of the way. This should be done alternately on opposite sides of the mouth from the back to the front. The teeth in the immediate vicinity of the fracture should be left free. When complete, we have an apparatus which is very firm, and which gives the minimum amount of inconvenience to the patient.

Mr. Pedley speaks of fitting a Hammond splint in the mouth, but it seems to me far the best way to take models

For by doing the latter one can get a more accurate fit, and the patient is saved the annoyance and pain of having the splint continually tried in during the process of bending up. However, with the former object in view, Mr. Pedley has designed a set of instruments which Mr. Bennett has kindly allowed me to borrow from the museum of the Odontological Society.

With regard to fractures of the Ramus and Condyle, all that can be done is to get the parts into position, and retain them there by means of bandages, keeping the mouth as still as possible.

Fracture of the upper jaw is much more uncommon than that of the lower, but the cases where it occurs are generally of a more serious character, since more force is required to break the upper than the lower jaw. There is very little treatment necessary beyond replacing the fragments in their original position. This is usually easy, but may require some amount of force. In a few cases mechanical appliances acting as a spring have been employed to gradually reduce the fracture. It may be necessary to support the fragments after reduction by a plate.

All small pieces of bone which are loose should be carefully kept, as owing to the very abundant blood supply, they will most probably unite rapidly. The only complication at all common is fracture and loosening of the teeth. This can be remedied by using a plate. When fracture is absent both in the upper and lower jaws a Gunning splint is very useful. The prognosis is very favourable the union taking place completely. But I am afraid I have far outstayed my welcome, and will therefore conclude by expressing the hope that consideration for the feelings of the reader may not deter you from a full and free criticism of the paper.

A MEDICAL MAN'S PERSONAL EXPERIENCE OF THE USE OE COCAINE,

Hypodermically Injected for Dental purposes.

At a recent meeting of the Academy of Medicine of Paris, M. Moreau stated that being about to undergo a long and very painful operation on some of his teeth, he gave himself a hypodermic injection of two centigrammes (one third of a grain) of hydrochlorate of cocaine in his right forearm.

Besides this, the affected area was painted over with a solution of twenty-five centigrammes of cocaine in two grammes and a half of distilled water (10 per cent. solution.) Some of the solution was injected into the cavity of a molar tooth, a altogether about 10 centigrammes (1⅝ grains) of cocaine were thrown into the tissues. The operation was performed, ten minutes after injection, though long and very intricate it was absolutely painless. M. Moreau was anæsthetised not only about the alveoli, but also the whole cutaneous surface as was shown by running a number of pins deeply into the tissues. It must be added that at the same time he was the subject of nervous phenomena characterised by disturbances of sight, convulsive tremblings of the upper extremities, great loquacity, and these phenomena had not quite passed off, at the end of an hour and a half. In answer to a question put to him by M. Galippe, M. Moreau stated that having experienced these accidents which were really of a very serious nature, he certainly should never advise any one to try this method of anæsthesia. M. Labordi stated that he had met with similar phenomena in guinea pigs. Death might result from syncope, due exclusively to the cocaine.

Reflections from the Surgery.

OPERATION OF ATTACHING AN ARTIFICIAL TIP TO THE BROKEN CROWN OF AN INCISOR CONTAINING A LIVING PULP.

Under the care of Mr. Skeet, New Plymouth, New Zealand.

A gentleman called to see me one morning, having just met with an accident which had caused the loss of the tip of the left central incisor, about three-sixteenths of an inch being broken off. The tooth was fractured but the pulp was not injured. I at first suggested divitalizing and cutting off the remainder of the crown, and pivoting ; to this my patient objected, but wished, if possible, to have an artificial tip attached. Remembering having read of a similar operation performed by Dr. Perry, of New York, some years ago, I determined to make the attempt.

Having secured a crown of the requisite shade, and ground it down to the proper size, I backed it with coin gold, and attached a small tongue of the same material, and proceeded to adjust it in the following manner :—

With the engine I ground down the tooth transversely, as near the pulp as I could without endangering its vitality, I also ground away a portion of the enamel on the lingual surface of the tooth, forming a cavity for the reception of the tongue, or strip of gold I had soldered to the back of the tip. Along the margins of this cavity I cut a groove into which I intended to anchor my gold, also in the centre of the lingual surface, but near the gum I cut a small round cavity of the same depth as the large one, and connected with it by an opening smaller than the small cavity itself, forming thereby a dovetail, into which the end of the gold tongue was to be fitted.

After the rubber dam was applied, and the tooth made perfectly dry, a little thin oxychloride was laid along the centre of the bottom of the large cavity, as well as into the small cavity, a little was also laid along the inner side of the end of the natural tooth, but not allowed to extend out to the labial border so as to interfere with the perfect adaptation of the two surfaces, that of the artificial and natural tooth, the joint having been made with the utmost care.

The tooth was then fixed in place, being applied in such a way as to force the excess of oxychloride towards the lingual side. Fixing the tip in its place on the tooth also implied setting the tongue to its place on the floor of the two cavities, and the removal of any excess of oxychloride. The tip was held firmly in place until the oxychloride had set. I now proceeded to pack the gold into the grooves, (holding the tooth tip firmly with the left hand, whilst with the right I used my Snow and Lewis' Mallet, the gold being placed in position by my assistant), building it up over the tongue and out to the original shape of the tooth, carrying the gold up close to the incisive edge of the tip. When finished, the joint could not be detected except on close examination. This operation was performed nearly three years ago, and is as firm now as when first done, the patient has never had the slightest discomfort from it.

British Journal of Dental Science.

LONDON, JANUARY 1st, 1889.

We bid welcome to 1889! To our readers we offer congratulations upon entering a fresh year, a new period of infinite possibilities. With Longfellow we say, "Let the dead past bury its dead," for what has been, must be looked on only as the beacon lights which guide us from the rocky shores of accomplished facts,—now as immutable as the cosmic laws—and forward us on our journey into the limitless future, limitless, truly, but of shortened limit to the individual, to each one of us. A retrospective glance at those beetling crags and cliffs of the past, may not be without interest, for, in many ways the year of grace 1888 has been an important one to dental practitioners. There has been much energetic work done both in London and the Provinces, and there has been a deal more talk. In science it cannot be said that the departed year has shown any great advance, the work of the learned societies has certainly been below the usual standard, but the meetings of the British Dental Association have been considered greater successes than those of preceding years, altho the papers which they have provoked have been far from uniformly meritorious. On the other hand a decided and distinct advance has been effected in the direction of practical demonstrations upon dental manipulation. We believe Dr. St. George Elliott long ago urged that clinical evenings with practical demonstrations, should be given at some of the Odontological Society's Meetings, and, although this useful suggestion has as yet fallen upon unwilling ears, yet the practicability of the scheme has been proved beyond cavil. Both in post-graduate classes, the advisability of which we have uniformly urged upon the profession for many years, and at Meetings such as the B.D.A.'s Annual Meeting, held at Dublin, the value of such demonstrations has been most strikingly shown. An ounce of example is worth many pounds of precept, and this truth is, perhaps, more true in dental practice than in any other department of learning. If we have shown little fresh energy as a profession in the department of research work, we have during the past year made no small progress in the manipulative processes of dentistry. Very much of the "old fogey" dentistry of which in times past we have been accused, has departed for ever, and new ideas, fresh lines of practice and novel departures, have become the order of the day. But thanks to the more sound scientific training of our leading spirits, we have escaped the will-of-the-wisp chase after those methods of practice, which, opposed as they are to our knowledge of physiology, have little but their novelty of which to brag. But the past year has not been devoid of good research work and careful scientific exploration. The papers of Messrs. Underwood and Hutchinson on Erosion and Dentine, and Mr. J. F. Bennett's most suggestive research upon the changes occurring in Dentine when acted upon by various agents, will do much to forward our knowledge of the physiology and pathology of the subjects treated. Dr. Cunningham's work upon the immediate treatment of pulpless and abscessed teeth, as well as his most elaborate papers dealing with implantation, is likely to commend itself to all thoughtful minds, for whether or no his conclusions will stand the test of time, there can be no doubt that patient and painstaking investigations, such as those undertaken by Dr. Cunningham upon the vexed questions of dental science and practice, are the only way by which we can hope to arrive at conclusions of any value. Another important aid in the same direction will be found in the collection of specimens, such as formed the magnificent museum in connection with the Annual General Meeting of the British Dental Association at Dublin during the summer.

Questions which have proved hard for many to answer, and which have found ample space for discussion in our columns, have been the problem of how to check advertising among dentists, and how to arrive at the ideal pain obtundent. The advertisers are still pursuing their practices, but it seems not beyond hope to anticipate that before long the different licensing bodies will not only be invested with the power, but be induced to wield the same against practices, which even many of the advertisers themselves admit to be meretricious, unprofessional, and unworthy of gentlemen. Many say, if my neighbours — and — will desist, so will I. It has been urged that hanging a deserter or two, *encourages* the others. *Fiat experimentum.*

THE YEAR'S VERDICT UPON COCAINE.—We have two distinct and conflicting kinds of evidence about cocaine in dental work—on the one hand we are told it answers admirably, Mr.—— has had a few successful cases, a few trifling failures and no alarming symptoms! On the other, we hear that after a prolonged use cocaine has been abandoned, or its use restricted to wedging cases, and the most minor dental operations. Nor is it difficult to explain this diversity of opinion. The effects of a powerful alkaloid like cocaine can only be tested by a prolonged and careful research, if undertaken with small doses and upon human beings. Those whose experience is narrow are sure to form a most erroneous opinion. Either cocaine fails utterly in their hands or they become enthusiastic in its praises. As a matter of fact most of those who have persued the subject carefully have grown more and more timid about using cocaine. Abundant proof has been now accumulated to show the truth of the following conclusions.

Cocaine is uncertain in its action, producing but slight effects on some individuals, unpleasantly severe upon others.

Painting over mucous membranes is insufficient if submucous structures are to be meddled with.

Hypodermic injections into the mucous membranes are liable to produce some constitutional disturbances.

These are, feeling of intense distress,—" impending death," precordial discomfort, great nausea, faintness, syncope, paresis of muscles, inability to stand, transitory loss of mental control, facial paralysis, inability to close the mouth, tottering gait ; coldness of the extremities ; disorders of vision ; temporary blindness, double sight.

Death has ensued from even small doses.

Dose. Less than half a grain is usually insufficient ; upon larger doses in a certain percentage of cases symptoms of poisoning come.

An interval of 8 or 10 minutes must be waited, between the injection and the operation, during this time the patient requires watching.

For tooth extraction cocaine is not reliable, and the quantity of cocaine required—gr. i.—very commonly gives rise to severe toxic symptoms.

THE ANONYMOUS LETTER SCARE-CROW.—The " English Dentist's " letter, to which we alluded last week, has been the cause of not a little heart burning in the camp of the London members of the British Dental Association. We are glad to find many of the leading spirits share our feelings in condemning the republication of the letter. It is monstrous that the Association should lend itself to such a transparently false step. It must alienate many of their friends and lower the prestige which has been so carefully guarded.

AN ACCIDENT IN EXTRACTION.—Dr. Gubb narrates an accident which occurred to a dentist of his acquaintance recently. Just as he had extracted a tooth from a patient under gas, and before he had removed the forceps from the mouth, the patient gave a violent effort, and fell on to the floor. The result was that he inhaled the loose tooth. When he recovered from the effects of the anæsthetic he complained of a certain "tightness" in the chest, and some difficulty of breathing, but not enough to make him very uncomfortable. Nothing was said to the patient on the subject, and three days later he returned saying that he must have "swallowed" the tooth which he brought with him. It had been expectorated after a violent fit of coughing. We should like to know which tooth it was and whether by "loose" Dr. Gubb means that the tooth was free in the mouth, or loose in the mouth, or loose in the alveolus. No other recorded case exists in which the symptoms as described by Dr. Gubb were not very much more severe.

THE DENTAL HOSPITALS AND THEIR SMOKING CONCERTS.—We have received accounts of two concerts, one under the auspices of the National Dental, and one under those of the London Dental Hospital, Students Societies. Both events appear to have to have been successes and to have secured large attendances.

DENTAL QUACKERY AND FALSE PERSONATION.

The following article, which we reprint from our contemporary *The British Medical Journal* comes opportunely, and although we confess that it reads more pacifically than we could wish when dealing with so great an abuse, still we welcome it as a step in the right direction.

"Mr. Turner, in his excellent address to the past and present students of the Dental Hospital, of London" remarked that our poor and our quacks will be always with us, and the truism admits of absolutely general application. But the presence of the latter class of persons, though incapable of total exclusion from the ranks of the dental profession, may yet be, in a considerable degree, brought under control by the judicious exercise of powers placed in our hands by the Legislature. Of these powers foremost stands the issue from schools and colleges of a supply of adequately educated practitioners capable of rendering to the public the full and complete service of dental surgery. The provisions of the Dentists' Act have rendered such a supply of practitioners practicable by placing educational control in the hands of the surgical colleges, and the supervision of the education, with the qualifying registration, in the hands solely of the Medical Council. Under these stable powers the dental student is now, and for some time past has been, required, before entering upon his professional studies, to pass a prescribed examination in the subjects of general education in common with the medical student, the educational equipment at starting being alike in the dental and medical student, and the course of professional studies for a time proceeding on similar lines. But, in order that the dental student may acquire an adequate amount of manipulative skill, an acquisition attainable in youth only, save in exceptional instances of exceptional aptitude, it is necessary that he should devote a fair share of his time from the outset to dental operations under competent instructors. The fingers must grow to their work, a condition necessary to the attainment of a high degree of excellence in many callings equally with dentistry, but not more necessary in any of them than in the latter.

It may be justly said that the dental student, when he has honestly conformed to the existing education, and gained by examination a place for his name in the *Dentists' Register*, enters upon practice more fully educated than any other professional man ; for he has through a period of four years been almost daily engaged in performing under competent instructors all the operations embraced in dental surgery. Professional education cannot go further, and if this point is not reached the Medical Council, as the supervisor, is at fault primarily, and the Colleges are in a less degree blameable. It is within the reach of these powerful bodies—trustees they may be called of the dental profession, on behalf of the public and of the profession itself—to abate, if not wholly to suspend, the mischief and scandal of dental quackery ; and there are unmistakable signs that the quack is now obliged, for profit's sake, to shift his ground, and try the effect of collective in the place of the failing personal puffs. Dental dispensaries, and institutions where marvels are said to be achieved by a body of selected operators, send forth their invitations to the public.

A second power of abatement lies in the effective power of successful prosecution of unregistered persons who proclaim themselves dentists, etc. The many cases undertaken by the British Dental Association have invariably led to conviction and the attendant fines. In this matter the Dentists' Act, in its penal clauses, is quite free from the baneful ambiguity of the Medical Act, and in this respect needs no further amendment. False personation by unregistered persons could, there is little doubt, be dealt with by the Association as a matter of fine, but the registered cover is beyond its reach.

The third great power—the power of professional life or death, by the removal of a name from the *Register*—lies solely in the Medical Council, and there is no appeal against its decision, if the provisions of the Act are strictly followed. A permanent Dental Committee is provided, and its findings as to the facts of a case submitted for its investigation are final, and the Council must act upon these facts. It is not allowed to accept the findings of any other body, although that body has within its powers removed the name of a licentiate from its register. For instance, the Irish College of Surgeons grants its Licentiateship in Dental Surgery on a condition signed by the receiver that the qualification shall be forfeited if he attracts business by means of public advertisements. A case of breach of contract occurred, the name was struck off the College register, and was ultimately erased from the *Dentists' Register* on the finding of the Dental Committee that the breach of contract with the circumstances attendant thereon was, in the words of the Act, disgraceful in a professional respect.

But the converse of this position does not in the Dentists' Act hold good. For if the Medical Council erases the name of a Licentiate from the *Dentist's Register*, the name must also be erased from the list of the College from which he obtained his Licentiateship, and must be again restored to such list, if the Council directs its restoration to the *Dentists' Register*.

The minutes of the recent meeting of the Medical Council contain an account of the powers of erasure of names from their lists of members, etc., possessed by the several medical authorities. Some appear to have ample powers, in others the power is less clearly defined, and some bodies have no power of erasure. Some would like to have the power, others require the power to be better defined, while others on the contrary do not desire to possess the power of erasure, considering that the Medical Council, as the body at the head of and representing all the authorities, should undertake the investigation of cases of misconduct, for it alone can remove a name from the *Medical Register*, and those who render themselves liable to erasure from a College list would care little for its removal therefrom, so long as it is allowed to remain on the *Medical Register*. The framers of the Dentists' Act took this view of the case, and much may be said in its favour. One argument against the Medical Council taking the initiative in the investigation of professional misconduct is based on the great pecuniary cost that attends every action of the Council. Still, if need be, this excessive cost may be very greatly reduced. It is believed that a guinea is the usual fee of members for the attendance at meetings of Councils of the medical corporations. Yet the office is attended with so much honour and influence that the place is eagerly sought by distinguished members of the profession. The honour and influence that go with a seat on the Medical Council are far greater than that attendant upon the corresponding office in a medical corporation.

The medical authorities and Medical Council have done much, are doing much, and can do much more by means they already possess towards the gradual abatement of quackery. By punishing disgraceful conduct by erasure, and by rendering an adequate education compulsory, they can render quackery profitless unless action is checked by the exhaustion of funds brought about by the excessive cost of their meetings. In the minutes already referred to, the President states that "a recent (medical) case, for example, cost for sittings of the Council £294 : it would have been £326 had all the members been present."

It is a good sign that attention to excess of cost is brought before the Council by its President, and in other respects the minutes of the last meeting give promise that better times in the general regulation of the profession, regarded as a whole, are coming.

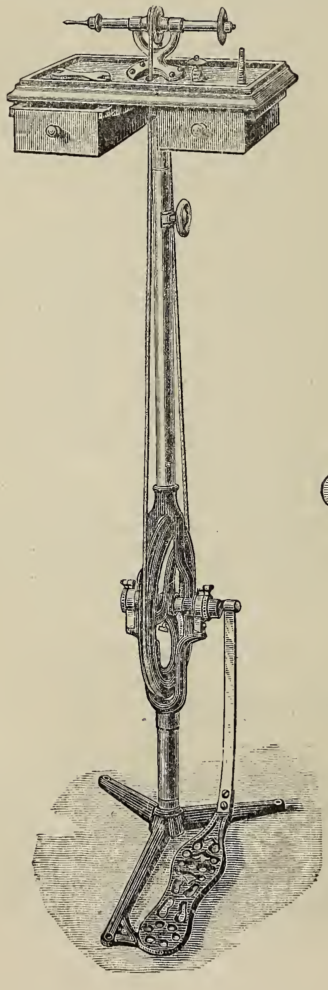
APPOINTMENTS.

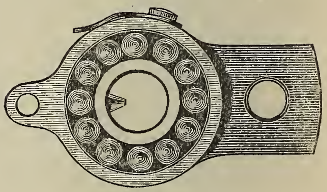
Mr. Chas. W. Glassington, M.R.C.S. and L.D.S. Ed., and Mr. Sydney Spokes, M.R.C.S. and L.D.S., Ed. have been appointed Medical Tutors to the National Dental College.

M. C. F. Forshaw, has been appointed Honorary Dental Surgeon, to the Bradford Tradesmen's Home.

Manipulative Miscellany.

All new instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being, to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.





BALL-BEARING OFFICE LATHE.

Mr. Francis Lepper has followed up his successful application of Ball-Bearings to the Dental Engine, already noticed in our pages, by bringing out a new Office Lathe fitted with the same appliances for practically removing all friction. The nickel plated steel upright is in two parts, one sliding within the other, so that, the centre of pulley wheel of head can be fixed at any height from 32 inches to 38 inches from the floor. The lathe head is well made, carries on the left a split mandrel for drills, &c., and on the right takes at once a corundum wheel secured by a nut, on removing which a chuck carrying button wheel can be screwed on, or similarly a taper screw for the usual polishing brush. There is also a table with raised edges, and two drawers of polished walnut. The whole machine is substantial, light, and graceful, the larger drawing conveying a very fair impression of the whole, the smaller showing view of Bearing uncovered.

Abstracts of British & Foreign Journals.

INDEPENDENT PRACTITIONER.

THE RELATION OF THE TEETH AND PALATE TO VOCALISM.

By Thomas Fillebrown, M.D., D.M.D., Portland, Me.

Having had considerable personal experience in vocal culture, favourable and unfavourable, and also in the forming and adjusting of obturators for cleft palate, the writer has been led to study the subject more or less thoroughly, and he finds his conclusions radically different from the teachings of dental text-books. The action of the soft palate has, perhaps, greater influence upon the tone of the voice than any other organ. Nearly every writer has, he believes, entirely misconceived the action of the velum. Drs. Flint and Lennox Brown are the more notable exceptions. Few writers, indeed, have made personal examinations on the subjects, but have been content to take for granted the general ideas of others. Most writers, he finds, neglect to notice the uses of the soft palate. Dr. Kingsley says: "Pure vocal sounds can be made by the resonance of the buccal cavity alone. Let any other cavity communicate with it, and the purity of the vowel sounds is destroyed. If there be any escape of breath or sound, however small behind the curtain of the palate, the vowels will be nasalised." Dr. Carl Seiler states: "The cavities of the nasopharynx and nose are separated from the direct influence of the vibrations of the vocal cords by the adaptation of the soft palate to the pharyngeal wall." Dr. Seiler conceives the head cavities to be a reinforcing power, but thinks they are set in vibration through the walls of the palate, and not through an opening behind the velum. This is entirely at variance with facts, as verified by the author's experience and observation. The true office of the soft palate is not to close, but to modify the opening into the nares, and thus attune the resonant cavities to the pitch and timbre of the note given by the vocal cords, throat and pharynx. A sound confined to the throat and mouth is harsh, weak, and without penetrating power; but aided by the reinforcing vibrations of the nasal and head cavities, the voice becomes soft, strong, and far-reaching, and agreeable to the ear of the listener. To understand how the palate or teeth affect vocalism, we must understand how the best tone is produced. This we can get by studying the organs themselves and their action. Every truly musical instrument has in it three elements—a power, a vibrator and a resonator. The human vocal instrument has these three elements, and each element variable according to the will or feeling of the player. This constitutes a modifying power, which gives a variety of quality known in no other instrument, and makes it the wonder and admiration of mankind. To these is added another element—organs for articulation. In this human instrument: 1. The lungs gives the power. 2. The vocal cords are the vibrator. 3. The nasal and head cavities are the resonator. 4. The mouth and lips are the articulator. The modification of these parts, produced by the feelings of the singer or speaker, give qualities of tone expressive of any emotion a person may feel. The walls and contained air of the head cavities, which consist of the mastoid and ethmoid cells, the antra, vomer, turbinated bones and frontal sinuses, present a vibratory surface of scarcely less than fifty square inches, and contain from twelve to twenty cubic inches of air, and constitute a resonator of wonderful power; but if they be shut off from the vibratory cords by closing of the velum against the posterior wall of the pharynx, their resonating power is lost, and the tone goes out undeveloped. The vibrations of the vocal cords alone are insignificant. It is the vibrations of the resonant apparatus of the human instrument which give pleasure to the ear, and are sonorous and far reaching. The nasal tone so much dreaded by vocal teachers, and the "Yankee voice" is not produced by an open palate, and the vibrations extending to the nasal passages, but by obstruction principally of the outer nasal passages by contraction of the alæ of the nose. If the nostrils be contracted by muscular actions or by outward pressure, the nasal twang will be pronounced; but if the nostrils be fully opened a full clear tone is given out. If while giving the prolonged sound of *ng* the exterior opening of the nose be alternately compressed and distended the difference in the sound will be very marked as to nasal quality. The genuine "Yankee tone" seems to be dependent also upon a contraction of the posterior nares and elevation of the dorsum of the tongue; but the pure nasal quality is produced as above described. That the velum is drawn forward allowing a free passage into the posterior nares during the vowel sounds, the writer has proved by observations. Singers cannot obtain the best quality of voice except in this way, and as speaking is only modified singing the same rule holds good for the formal speaker as for the singer. Because the singing voice is so much better understood, he has analysed its productions to illustrate the formations and delivery of the speaking voice. The essential qualities of a tone are now recognised to be softness and resonance, the last making it far reaching and effective. Power and volume are the product of increased resonance and largeness. Resonance is increased by the more perfect focusing of the vibrations. Largeness is improved by a general expansion of the cavities of the throat, mouth and nose, especially by depression of the tongue. To properly form and deliver a tone all the organs involved should be correctly trained and well used. Correct breathing is very essential, and this is universally conceded to be the abdominal breathing. The lower part of the thorax is enlarged laterally, and the abdomen is enlarged both laterally and anteriorly by the depression of the diaphragm. The shoulders should never be raised. Expel the breath by contraction of the abdominal muscles ; and in proportion as they are trained and strengthened will the possible force and intensity of the tone increase. It is worthy of notice how much more the breathing capacity can be lessened than increased from the state of rest. The larynx should rest in the position it takes during a yawning inspiration ; any bobbing up and down is detrimental to the quality of the tone and injurious to the organ. The head should be inclined a *little* forward, the chin down, and the under jaw drawn back, the tongue should lie as low as possible in the mouth, and the mouth and pharynx made large. This will throw the velum forward and open a free passage into the nares. The principal centre of vibrations is the middle of the nose. The tone should seem to be made in the nose and head, and the vibrations can be plainly felt by placing the finger lightly on the thin bones of the nose or upon the top of the head. All good singers produce their upper notes in this way ; but many take the lower notes differently. The more nearly the voice is focussed, as here described, on low tones as well as high, the better the tone will be, and only in this way can the best results of which a voice is capable be obtained. The centre of articulation is apparently through the necks of the upper teeth and lip. If these rules are observed the voice will not be disturbed by articulation, and the speech will seem to be entirely independent of the tone, as the articulation of the solo singer is independent of the organ tone which surrounds her, though she sets all the air in vibration by speaking the notes. Many theories are held as to the registers of the voice. Some claim one, some three, others six or more. Register means a condition of the vocal organs as to position, focus or tension, of one or more parts, which changes when passing from one register to another. The writer thinks there is but one register, or rather no such thing, further than it applies to the compass of the voice. Vocal organs used as thus described, will scarcely feel fatigue, and hoarseness will be to them almost unknown, and "minister's sore throat" an unheard of trouble. To obtain the best results each organ of the voice must be not only well trained, but well formed in all of its parts ;

hence, if the teeth are mal-formed, irregular, or there are spaces between the anterior teeth, or they suffer mal-arrangement, the quality of the voice will be disagreeably affected. A prominent upper or under jaw or the absence of one or more teeth render vocalizations and articulations more or less imperfect and peculiar. The palate must also be perfect, and harmony of proportions and relations must exist between all parts of the vocal organs. Artificial substitutes for lost or absent parts, whether they be teeth or palate, can never fully perform the functions of the natural members. The expectations of the patient and their friends may be moderated so far as to be fulfilled ; but to the educated ear, the imperfection will be apparent. The soft palate moves in all directions, not only forward and backward, but upward and downward ; it also shortens and lengthens. As yet no obturator has been constructed that can compass more than the two first movements, consequently it cannot perfectly supply the absent part. Dr. Kingsley's flat soft rubber velum more nearly fulfils the conditions required than any other yet invented, and if the material was not so perishable, it would be all that could be reasonably desired. The ball obturator hung in the throat is unphilosophical and unphysiological. It fills up the passage to the nares and obstructs the entrance to the resonator of the voice. Thus doing precisely what it is desirable to educate the natural velum not to do. Hard rubber is cleanly and durable, and is the best material for this purpose. An obturator which has proved most useful to the writer is one made of hard rubber nearly flat, curved to correspond to the form of the natural velum long enough to reach back against the anterior tubercle of the atlas and attached to a plate by a hinge or otherwise so as to move freely back and forwards with the edges rounded, and so formed that the muscles of the split velum will just close forward of it and carry it back against the posterior wall of the pharnyx during swallowing or speaking. The sizes and form of the velum at the upper portion where the hinge is attached should just fit the notch of the cleft so that the parts will just close around it tight when they contract. Such an instrument serves very nearly the purpose of the soft rubber velum, and is in harmony with the philosophy of voice production as to-day demonstrated. The training of the larynx must be negative. The position is easily determined by a yawning inhalation. The effort of the mind must be to leave it unrestrained by the action of the supporting and surrounding muscles. The pitch is determined by the interior muscles controlling the vocal cords. Contraction of the muscles exterior to the larynx is one great cause of the throaty tone so common and so injurious, Any exercise, as lifting, rowing or dumb-bell, which requires a fixation of the breath, will strengthen the abdominal and thoracic muscles and increase the breathing power. Full, deep and prolonged inspiration will increase the breathing capacity. Slow inspiration and expiration will give control of the muscles, and enable one to use at will the power and capacity acquired.

Reports of Societies.

STUDENTS' SOCIETY.
THE DENTAL HOSPITAL OF LONDON.

Ordinary General Meeting, held November 15th, 1888.

W. Hern, Esq., *President*, in the Chair.

The Minutes of the previous Meeting were read and confirmed.

Mr. Baldwin asked if it were necessary that the minutes of the previous Meeting be read *in extenso*. It was decided after a brief discussion to leave the matter in the hands of the Council.

The following gentlemen having signed the Obligation Book, were formally admitted to membership by the President. —Messrs. W. May, H. A. Forsyth, W. H. Davies, A. C. Gask, F. Breese, A. C. Day, H. Dormer, G. W. Welham, R. M. C. Harrison, and E. T. White.

Messrs. H. L. Hayman, and Alan Goodridge were balloted for, and elected members of the Society.

Messrs. G. G. Spray and W. R. Barrett were appointed to audit the Treasurer's Accounts for the year.

The President then called on the Secretary to read the list of members nominated by the Council to serve as Office bearers for the ensuing year, and added that if it were desired to add any other names to the list, it was to be done at the present meeting. The list is as follows :—

President :—W. Hern, Esq.

Vice-Presidents :—Messrs. Chas. F. Rilot, J. F. Colyer.

Treasurer :—Mr. F. C. Porter.

Secretaries :—Messrs. W. H. Dolamore (for the Council), F. A. Harsant (for the Society).

Curator and Librarian :—Mr. E. Preedy.

Councillors :—*Senior*, Messrs. A. Black, F. Burton, E. Parsons, G. G. Spray, J. P. Oliver. *Junior*, Messrs. W. R. Barrett, E. H. L. Briault, G. Hern, H. A. Forsyth.

On Casual Communications being called, Mr. Spray showed a lower molar with four distinct canals.

Mr. Cohen exhibited a model of a lower jaw showing a supplemental incisor, one bicuspid was missing on the left side.

Mr. Dunlop showed a supernumerary tooth occurring between the incisors, which had been erupted after the other teeth had been sometime in place. He also showed several teeth, the subjects of well-marked attrition.

Mr. G. W. Welham presented a three-rooted upper bicuspid, and a model illustrating the transposition of bicuspid and canine.

The President then called on Mr. F. A. Harsant for his paper on "Fractures of the Jaws and their treatment." [See page 14]

Mr. Newland Pedley, in opening the discussion, said he had little to add to the excellent paper which had just been read. He advocated the use of steel wire in making Hammond's splints for two reasons. (1) strength, and (2) diminished bulk. He agreed with Mr. Harsant in discountenancing external appliances, and condemned Mr. Ward Cousin's proposed splint as being utterly impracticable.

The President then shewed some models in illustration of the paper, giving a brief *resumé* of the details in each case. Case No. 1 was one in which he applied a Hammond's splint in the usual way, enabling the patient at once to resume ordinary diet. This patient had had the two halves of the jaw wired together, but without any effect. Case No. 2 was that of a little child, affording another argument for internal splints, for, owing to head injury, the child was constantly vomiting, hence necessitating the frequent removal of the external splint and 4-tailed bandage. In this case a Hammond's splint was put on while the patient was under chloroform. Case No. 3 was a somewhat unique case, the patient having sustained a double fracture, the one fracture being between the right lateral and canine, and the other right behind the last molar on the left side. The left fragment was considerably displaced downwards, so, to correct the deformity and to maintain the fracture in the correct position, Mr. Hern had to adopt a vulcanite splint to lower jaw, somewhat similar to a Gunning, and use external pressure by means of a skull cap, chin cap and straps.

Mr. Seymour described the method in which the several teeth should be wired to the Hammond splint, laying great stress on the direction of the last twist of the wire when tucking the end out of the way under the outer wire of the splint. He said, that if a tooth or root were between the fractured ends, it should be removed at once, as it only set up irritation, and delayed, if not prevented, union. He called attention to the fact that a pad of wool or some soft material should be placed under the knots of the 4-tailed bandage, since they frequently produced sores from pressure.

Mr. Dolamore pointed out that although Hammond's splint was undoubtedly the best, it could not be applied unless there were teeth on each side of the fracture, and in such cases he would prefer Gunning's splint.

Mr. Woolf asked if the Hayward's splint was applicable in cases of fracture of edentulous lower jaws.

The President then called on Mr. Harsant, who briefly replied.

The Secretary then announced that at the next General Meeting he would bring forward on behalf of the Council, the following resolution :—" That Rule No. III. be altered to read as follows :—

" That the affairs of the Society be managed by a Council, consisting of a President, two Vice-Presidents, Treasurer, Curator, two Secretaries, and nine Councillors, five of the latter being chosen from the Senior Students, *i.e.*, those who have been a year or more at the Hospital, and four from the Junior Students. The President, Vice-Presidents, Treasurer, Curator, and Secretaries, shall retire annually, but shall be eligible for re-election, except the Senior Vice-President, who shall relinquish office as such."

The President then moved the usual vote of thanks to Mr. Harsant for his paper, and to Messrs. Spray, Cohen, Dunlop, and Welham, for their Casual Communications. He announced that the next Meeting would be held on Monday, January 21st, when the Office Bearers for next year would be elected, and Mr. W. H. Dolamore would read a paper on " Dental Abscess."

The Meeting was then adjourned.

Dental News.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Annual General Meeting, Jan. 14, 1889.

Business: Election of officers and council for ensuing year. Reception of Reports from Treasurer, Librarian and Curator.

Casual Communications by Mr. Wm. Hern, M.R.C.S., and Mr. Boyd Wallis, Mr. E. Lloyd Williams, Mr. Haymont, Dr. Mitchell.

VACANCIES.

The Governors of Guy's Hospital have decided to open a complete Dental School as an extension of the Dental Department of the Hospital. The following appointments will be vacant:—6 Assistant Dental Surgeons, Lecturers on Dental Anatomy and Physiology and Dental Mechanics; an Anæsthetist and a Tutor for the Dental Students. Application to be made to the Clerk of the Governors on or before the 25th March.

Dental Hospital of London, Leicester Square.—The post of Demonstrator of Contour and Cohesive Filling to this Hospital is vacant. Application to be made before January 21st to the Dean.

Dental Hospital, Leicester Square. The post of Dental Surgeon is vacant. Application to be made on or before Feb. 11th, 1889, to the Secretary.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

AMALGAM FALLACIES.

To the Editor of the "British Journal of Dental Science."

Sir,

Dr. Morsman revises his opinion that pure silver and mercury will not set by saying "the setting of a silver amalgam is not *exactly* like the setting of an alloy amalgam" and that it will not set unless made in a proper manner. This is very different to his first statement. It is very well known by all who have experimented carefully that zinc reduces the discolouration in the mouth and that the so-called white alloys depend on this metal for their properties. It is also very well known that gold makes an amalgam much cleaner and pleasanter to work without doing injury in any other way, and it is also well known that platinum in combination causes an initial quick setting for about 10 or 15 minutes after the mercury is mixed with the alloy. Unless this initial setting is taken advantage of and the alloy is left undisturbed within 15 minutes after the mixing the presence of platinum is a decided objection. This often repeated explanation is the reason why operators who insert amalgams very slowly, as Americans usually do, find the presence of platinum a disadvantage.

I am perfectly aware that an analysis (or as Dr. Morsman calls it an 'essay') of an amalgam was made and no platinum found, and I am also perfectly aware that the said alloy was not made by me, and that it bears no resemblance to any alloy I have ever sent out. Silver and Tin alloys such as Dr. Morsman recommends, do fair work in good hands, but they always lift at the edges by balling up, and they discolour badly. Zinc reduces the discolouration, gold makes them cleaner and pleasanter to use, and platinum or bismuth prevents the balling up, the use of platinum entailing the necessify of quick packing.

Dr. Morsman says his beliefs must be taken for what they are worth, they were so taken and apparently not greatly to his satisfaction.

THOS. FLETCHER.

Warrington.

"DR." OR "MR."—WHICH?

Dr. Mitchell, (D.D.S. Mich.) writes:—

In your Journal of December 15th, 1888, there appears in your Editorial, "Dr." or "Mr."—Which? such a personal allusion to myself, coupled with statements as divergent from facts as possible, that I must ask you in common justice to afford this letter space in your Journal.

You go far out of your way when you allude to me in "the D.D.S. coterie," . . . showing "bad taste in rebelling against the ruling of the chair," &c., &c.

There was on my part neither desire or interest to do or say anything contrary to the dignity of either the chair or meeting, and had I done so, I imagine the chair would have been fully equal to the occasion. In regard to the dropping of the "Dr." by English dentists, you are wrong when you say "it is in order to be consonant with English society." *It is because a British subject cannot register an American degree, and for no other reason.*

[Dr. Mitchell has curiously enough been led into adjusting to his own head a cap which obviously was not intended for him. We say "obviously" advisedly, since our Editorial remarks referred to the Discussion upon Dr. Mitchell's paper, in which he naturally only took part by answering questions at its close. As Dr. Mitchell feels aggrieved, we insert that portion of his letter which is pertinent, and are pleased to inform him that he was not personally alluded to in our article. He is in error in saying American Dental degrees are unregistrable in England, both those of Harvard and Michigan are so (under the delimitation of Sec. 9 of the Dental Act), but those who hold English diplomas usually practise upon them and do not employ the D.D.S. or D.M.D. We neither expressed nor intended to depreciate the D.D.S. Mich., or D.M.D. Harvard, the fact of their admission to the English Dental Register stamps their sufficiency. We may remind Dr. Mitchell that although "Chairmen" like "Editors" may be equal to the occasion in protecting their dignity, yet when questions of courtesy and good taste arise, they must to a large extent trust to the right feeling of those with whom they are brought in contact.—Ed. B. J. D. Sc.]

Hospital Reports.

Monthly Statement of operations performed at the Dental Hospital of London, Leicester Square, from Nov. 1st to Nov. 30th, 1888:—

Number of patients attended		
Extractions	Children under 14	428
	Adults	1061
	Under Nitrous Oxide	1009
Gold Stoppings		419
Other Stoppings		1030
Advice		157
Irregularities of the Teeth		156
Miscellaneous and Dressings		471
Total		4731

Geo. Seymour, L.D.S., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of November, 1888 :—

Number of Patients attended		1191
Extractions	Children under 14	926
	Adults	
	Under Nitrous Oxide	101
Gold Stoppings		30
Other Stoppings		162
Miscellaneous		367
Total		1586

P. A. Linnell, *House Surgeon.*

Monthly Statement of operations performed at the National Dental Hospital, from Nov. 1st to Nov. 30th, 1888 :—

Number of patients attended		3011
Extractions	Children under 14	313
	Adults	481
	Under Nitrous Oxide	790
Gold Stoppings		124
Other Stoppings		718
Advice		852
Irregularities of the Teeth		99
Miscellaneous and Dressings		175
Total		3542

E. C. Fisk, L.D.S., Eng., *House Surgeon.*

ANSWERS TO CORRESPONDENTS.

D.M.D. in future. No first class dental degrees are to be obtained in 3 months. Qualified dentists (L.D.S.) can get D.M.D. or D.D.S. after nine months residence and passing the required examination at Harvard or Michigan.

Mr. G. E. Rogers. The cases you mention seem interesting, we shall be glad to receive particulars.

British Journal of Dental Science.

No. 504. LONDON, JAN. 15, 1889. Vol. XXXII.

WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

By Dudley Wilmot Buxton, M.D., B.S. Lond.

Member of the Royal College of Surgeons and of the Royal College of Physicians of England, Administrator and Teacher of Anæsthetics in University College Hospital, London; Administrator of Anæsthetics in the Hospital for Women and the Dental Hospital of London.

(*Continued from page* 5.)

The question of dropsy may also be considered here.

Dropsies affecting the chest, the abdomen and anasarca, or dropsy of the lower extremities may be caused by anæmia, Bright's disease (chronic renal disease) chronic hepatic disease, or as the result of effusion following inflammation of serous membranes, *e.g.* effusion into the chest after pleuritis, effusion into the abdomen consecutive upon peritonitis.

In estimating the degree of safety of such conditions when it is proposed to give nitrous oxide to the persons who suffer from them, we have to consider mainly the cause of the dropsy rather than the dropsy itself, and should, therefore, direct the attention to the heart, the vessels, the kidneys and liver, and having determined which is at fault, then judge of the extent of the disease and decide by the rules which have been given above, whether or no it is desirable to administer nitrous oxide gas. But the dropsy, if very extensive may itself require to be taken into our reckoning, for very severe conditions of ascites and thoracic effusion (more especially if left sided, may displace the heart mechanically by pressure, and so oblige the heart to work at a disadvantage. There is here a twofold danger, that viz., of still further embarrassing the already overtaxed heart, and, secondly, that which arises when the effusion being removed by tapping, etc., the heart assumes its normal position. These cases need the greatest care, a properly selected posture and precautions in case of syncope, still it cannot be too emphatically insisted upon that their danger is not the direct outcome of nitrous oxide, but resides in the conditions themselves. A similar class of cases are those in which are included cystic tumours, and which give rise to abdominal distention. A case in point may explain. An elderly woman, a former patient of my own in the wards of University College Hospital, suffered from a slowly filling cyst connected it was believed with the left kidney. This cyst gave no inconvenience except for its bulk, but as it only filled to distension after many months of absolute ease, and as the patient's age was against any save palliative treatment, it had been decided to tap her from time to time as occasion required. This little operation had been performed several times at intervals of about a year, when at length Mrs. O., being very feeble and her abdomen greatly distended I was called in to administer gas while the puncture into the cyst was made. The patient was almost pulseless, and the heart's action very feeble, but I was told she dreaded the pain of the puncture, and so I consented to give nitrous oxide. For the convenience of the operator, Mrs. O. was placed upon her side, but I found she became worse, the radial pulse disappearing, so I turned her upon her back, keeping the head low, and the legs held up. In this posture she took gas fairly well, but just as the administration was complete, the respiration became embarrassed and almost ceased. A few gentle respirations artificially excited, however, set going normal respiration, and Mrs. O. rallied. The case is worth citing because it shows the dangers likely to occur, and the need of the utmost vigilance in watching symptoms. It should be added the cyst was very gradually emptied, and pressure by a flannel bandage was maintained so that no sudden displacement of the heart could take place. Indeed, I am sure had such a thing occurred in Mrs. O's case the utmost danger to her life would have been incurred.

Ovarian cysts must fall into this category, although as a rule, before they have attained so large a size they are removed. Two of the largest ovarian cysts I have ever seen occurred in women to whom I gave ether. In both cases I commenced the anæsthesia with nitrous oxide gas, and the patients passed under its influence without the least untoward symptom.

ORGANIC DISEASE OF THE HEART.

It is convenient to consider cardiac lesions under three heads:—

1. Diseases affecting the Heart muscle (myocardium.)
2. „ „ „ Valves of the heart, (endocardium).
3. „ „ „ Pericardium.

The heart muscle like voluntary muscle, is capable of enlargement and increased development in proportion to the work it has to do, and such enlargement constitutes the Hypertrophy of the heart with which we are so familiar, and which is roughly tested by the heaving character and force of the apical impulse. But again like the voluntary muscles, the myocardium will only increase in power up to a certain point, if the work imposed upon it goes beyond the heart's capacity, the muscle gives, the heart enlarges, (dilatation) by thinning of its muscular parietes while the ventricles undergo enlargement. Of course these conditions, hypertrophy and enlargement (dilatation) affect the left heart more than the right, because the left ventricle has more work to do than the right, and because the causes of this hypertrophy arise in the systemic rather than the pulmonary system of vessels. Dilatation is roughly estimated by the diffused apex beat, instead of a sharp localised impulse felt when the heart is healthy, a weak thrilly impulse is felt over a wide area when much cardiac dilatation exists. Hypertrophy of the heart may occur as the result of disease affecting the valves of the heart, and as such valvular disease follows acute rheumatism, scarlatina, and some of the other acute exanthemata, one is always on the look out when persons who have had rheumatic fever apply for administration of an anæsthetic, lest there is severe cardiac mischief which would require careful consideration before running the possible risk of anæsthetisation by chloroform, ether, nitrous oxide, or cocaine. It is seldom we meet with an hypertrophied heart that is not a more or less dilated one, so that in practice we regard such a heart as a sign of weakness, and not of strength. It is usually tantamount to the body's living upon its capital rather than economising upon its interest. Hypertrophy also follows chronic kidney disease, especially that form which is associated with gout. Arterial disease producing atheroma and calcification, is detected by the hardness of the pulse, and sometimes by the whipcord like character of the radial artery felt when the fingers are laid lightly upon it.

Again, persons afflicted with Exophthalmic Goitre are subject to hypertrophy of the heart. The condition is easily recognised by the prominent goggle eyes, and the fulness of the neck, evincing the thyroid enlargement.

Under conditions in which the heart works at a disadvantage as in a deformed chest, hypertrophy will appear. In rickets, after pleuritic effusion, or empyema, and when a thickened pleura grows adherent, such deformity may arise. But besides, conditions of deformity, the pressure of tumours in the chest or abdomen may cause displacement of the heart, and so lead to hypertrophy.

A less well authenticated cause for this growth of the myocardium is said to be "excessive heart action," such as, for example, occurs in persons the subject of habitual nervous palpitation, or palpitation consecutive upon indigestion.

Muscular strain has long been recognised as a cause of hypertrophy of the heart. The persons of soldiers, blacksmiths, and those who do severe arm work, as well as athletes, boating men, *et cet,* are liable to much injurious strain

As the largest proportion of the arteries run in muscular tissue, the firm contraction of this will press upon the vessels and form a most injurious impediment to circulation through them, this telling back upon the heart determines hypertrophy.

Dilatation besides being consecutive upon simple hypertrophy as described above may follow any condition acting upon an enfeebled frame, such as is engendered by acute or prolonged illness, and is liable to ensue upon inflammations affecting the myocardium. Anæmia may also favour dilatation.

A few well framed questions will put us in possession of important information concerning these patients.

When the hypertrophy is not in excess of the work the heart has to do, the symptoms will naturally be so slight as to escape observation, but as soon as it passes that point there is more or less difficulty of breathing, especially upon slight exertion, as running upstairs. There will also be discomfort and palpitation felt over the heart area. The pulse will be irregular, often intermittent, and the face is flushed while the extremities are cold. When the dilatation is much in excess over the hypertrophy there will be a marked tendency to congestion of the lungs, and fullness of the venous system. The ankles, we shall be told are puffy and swollen after long standing, and may pit on pressure. The urine also will decrease in quantity and be of a somewhat more concentrated character, depositing a sediment upon standing. There will be besides the difficulty in breathing, a cough, often very troublesome, and especially after exertion or excitement.

(*To be continued.*)

ON AMALGAMS.*

By Dr. St. George Elliot.

Mr. Chairman and Gentlmen,

Before taking up the subject of Copper Amalgams, I would like to exhibit Dr. Taggart's Corundum Disc-maker. You will see that it consists of a large pair of pincers ; one jaw contains the dies and blank mandrel, the other is a mere pressure-plate. Broken pieces of corundum wheels are softened by heat and placed in the die, and on closing the handles, the corundum is forced on the previously roughened surface of the mandrel.

The mounted corundum is then taken from the die and placed for a short time in alcohol, to remove the smooth shellac surface. Not only can every dentist make his own corundum points, but they are better than those ordinarily made, inasmuch as the corundum is made upon the mandrel and cannot get loose.

I would also call your attention to the S. S. White Asbestos Soldering Block. You will see it is a circular block, about one inch thick, hollowed out. By placing two of these together, you have an excellent annealing oven, either for steel or gold work.

COPPER AMALGAM.

As it has been stated in the professional journals, on the authority of some prominent dentists, that copper amalgam does not shrink, and as this was quite contrary to my own experience, published by this Society some years ago, I have undertaken a more extended series of experiments, the result of which is now before you.

I have tried four modes of ascertaining the shrinkage, viz., stoppings, inserted in celluloid, human teeth, glass tubes, and the specific gravity test. The latter is the only one I consider of much value and it was introduced by Mr. Charles

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* A Paper read before the Odontological Society of Great Britain.

Tomes many years ago. The reason why the other modes are objectionable is, that the co-efficient of expansion is not the same as that of a human tooth, glass probably coming the nearest.

We have here 24 experiments with tubes, 21 of which are with copper amalgam, while the remaining 3 are with silver tin alloy. You will notice that all the copper amalgams have allowed the red ink to pass them, while the silver alloy has shown itself to be fairly tight.

TABLE OF SHRINKAGE.

Specific Gravity Test.

5	Specimens of	A	·65	Copper.
1	,,	A	·54	
2	,,	B	·66	
4	,,	C	·91	
1	,,	E	·35	Silver Alloys.
2	,,	F	·16	
1	,,	Silver coin	·21	
1		Copper amal. and silver filings	·48	

Masses tested weighed 10 to 12 grammes kept for six days at a temperature of 100°.

We have on the wall a table which I have drawn up, of the absolute shrinkage of some nine or ten specimens of copper amalgam. When I brought before you similar tables some time ago, the accuracy of my experiments was doubted because a very remarkable result was very fully shown. The earlier observations have, however, been quite corroborated by the more recent ones. You will notice that the amalgam does most of its shrinking within the first twenty-four hours, and that subsequently it seldom remains the same for any length of time, shrinking and expanding in a small but measurable quantity. To decrease the possible errors which might arise in this delicate form of investigation, I have used large masses of amalgam. In the earlier experiments I took less than two grammes, while in the present ones I used ten to twelve grammes. There is a fair amount of agreement in the shrinkage of different specimens of copper amalgam, 60 to 80 milligrams in 10,000.

Table showing Daily Fluctuation.

	November							Per cent.	Maximum Shrinkage
	6th	7th	8th	9th	10th	12th	13th		
No. 1	12·041	12·113	12·117	12·116	12·114½	12·114½	12·115	·63	·76
,, 2	12·810	12·081½	12·085	12·087	12·085	12·088	12·089	·65	·79
,, 3	12·015	12·087½	12·095	12·092	12·098	12·098	12·101	·67	·86
,, 4	12·010	12·080	12·085	12·017	12·093	12·094	12·098	·73	·88
,, 5	12·016	12·089	12·087	12·089	12·091	12·093	12·095	·65	·79

The above represents in milligramme the daily change, increase in weight showing shrinkage.

As a matter of comparison, I have combined with this table similar tests, with the same alloy used in the tube experiments. You will see that the percentage of shrinkage in copper amalgam is from 5 to 7 per cent. of the mass, while with one of the two specimens of silver alloy it is a trifle over 3 per cent., the other a little more than 1 per cent., or in other words, the best copper amalgam shrinks four times as much as the silver alloys used.

Breaking Strain.

Bricks 1 m. by 4 m. by 25 m. Nov. 1888.

Kind	No. of Experiments	Average strain in ozs.	
A ...	52	12 15-16ths	Home-made copper amalgam.
A ...	36	4 13-16ths	,, ,, underheated.
B ...	28	36¼	,, ,, 6th heating.
C ...	37	38	Copper amalg. from manufacturer.
D ...	30	34 1-8th	
G ...	26	41 3-16ths	
G ...	23	41	
G ...	20	34 3-8ths	
E ...	27	55 1-8th	Silver alloy from manufacturer.
E ...	23	69 13-16ths	
E ...	24	23 15-16ths	
F ...	35	63 3-16ths	
F ...	4	60	
F ...	17	58¾	

Now we come to the question of edge strength. This table shows the breaking strain of the several amalgams already alluded to. The breaking strain was obtained by placing small amalgam bricks, one millimetre in thickness by four in breadth and twenty-five in length, in a crushing apparatus I made for the purpose. These bricks are formed in a steel mould, which we have upon the table. Five bricks of each kind of amalgam were tried, each brick gave me from five to ten breakages.

You will notice the enormous difference that exists between the maximum and minimum, some bricks giving way at a pressure of less than an ounce, while others gave me as high as seven pounds. The difference in strength of the amalgam bricks is owing more to the manner of treatment than to the difference in kind. To get the best results the mercury should be fully driven out of the mass before it is broken up in the mortar. If the ordinary directions are followed and the spoon removed from the heat on the appearance of the globules it will be found that the globules are comparatively weak. It is better to drive off an excess of mercury by overheating and subtracting, subsequently adding what may be necessary to obtain the proper plasticity, than it is to allow some of the combined mercury to remain in the mass. The bricks on the table which are so weak are those made by underheating the specimens. One of the several specimens, both in the specific gravity and breaking strain tests has been heated and worked over six consecutive times, and I find little if any injury resulting.

It will be shown that the silver alloys tested give a better result, not only as regards shrinkage, but edge strength. It has been stated in the test books that silver is the expanding element of silver alloys. In this series of experiments I have only tried one specimen of silver, and that is Standard or Coin silver mixed with mercury. As you see, I fail to get any expansion, but a considerable degree of contraction. Of course a single experiment does not prove anything, but I hope to go into the subject more fully.

I have tried a curious experiment in mixing coin silver fillings with plastic copper amalgam. The gravity test has shown a diminution in the amount of contraction.

Amalgams of all kinds are very uncertain bodies ; there is a molecular change going on, apparently indefinitely, and, although it may not be sufficient to be a serious practical objection, yet it certainly must be one cause why amalgam fillings are not always satisfactory.

The directions given by manufacturers of copper amalgam are, that it shall be washed in dilute sulphuric acid and subsequently in water. You will see by the litmus paper, that, when these directions are closely followed, the acid is not fully eliminated ; after washing several times with water I produce an ounce of amalgam costing sevenpence. The rapidity of precipitation is vastly increased by the aid of heat.

I have not found by these experiments that the precipitation by iron, gives, in any respect, better results than that of zinc, while the colour is certainly inferior.

Finally, gentlemen, it seems to me that it has been fairly proved that copper amalgam shrinks much more than some silver alloys, and that it has also less strength ; but, at the same time, it is undoubtedly a material of very considerable value as an antiseptic, in the stopping of teeth of poor structure.

ON SOME CONGENITAL PHARYNGEAL TUMOURS.*

By J. Bland Sutton, F.R.C.S., Honorary Member of the Society.

In 1887 Dr. Walker exhibited before this Society the head of a calf, which presented, in addition to a cleft involving the soft and greater part of the hard palate, a median fissure of the lower lip and symphysis ; the tongue was bifid at the apex.

This head has since been dissected and described in detail by Professor Windle,† who found that the fissures were caused by a tumour connected with the under surface of the basi-sphenoid, and projected downwards into the mouth to be attached to the mandible. This tumour was connected by a long pedicle to the floor of the pituitary fossa : the floor of the fossa presented a deep pit immediately above the point of attachment to the pedicle, but did not apparently extend into it. The tumour was composed of two pieces of bone united by ligament; parts of this bone were of ivory-like density, and contained two molariform teeth.

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* A paper read before the Odontological Society of Great Britain.

† Journal of Anatomy and Physiology, vol. xxii, p. 423.

Some similar specimens have recently come under my notice, and as they lead to conclusions of some interest, I have ventured to bring descriptions of them under the notice of the Society.

For my first specimen I am indebted to Mr. Wilson and Dr. Job Collins. It is the head of a foal with a median hare-lip and cleft palate. I immediately suspected that it was caused by a teratoma: a median sagittal section was made of the head, and a remarkable tumour was found wedged in between the superior maxillæ. This tumour was of irregular oval shape, and suspended from the under surface of the basi-sphenoid by means of a pedicle formed of striped muscle and fibrous tissue. The tumour consisted of two parts, which for convenience may be referred to as upper and lower. The upper one had some resemblance to a superior maxilla, and presented three well-formed molar teeth, the parts, including the teeth, were covered by thick mucous membrane. The lower piece was made up of two mandibles fused throughout their length, and presented on each side three well-formed molar teeth. The parts were covered with mucous membrane. Attached to the right side of the lower piece was a tongue attached at its anterior extremity to the normal tongue of the foal.

Thus it will be seen, that this tumour consisted of a supernumerary upper maxilla, two rudimentary mandibles, and an extra tongue attached to the under surface of the basi-sphenoid. Unfortunately the brain was not in a condition to allow of its accurate dissection: this is regrettable because an examination of the skull-base reveals a remarkable condition. The view from the interior of the cranium shows that the pituitary body is double, the sellæ being separated widely. There are two cristæ gallæ and two cribriform plates; each lodged olfactory lobes, so that this foal possessed four sets of olfactory nerves. The aperture accommodated the pedicle which supported the teratoma.

My next specimen occurred in a pig. This pig had two bodies, each with limbs normal in number. The head was single, and presented posteriorly a meningocele, which communicated with the subdural space by a rounded opening in the anterior fontanelle. The snout of this pig presented three narial apertures, the palate had two clefts and a bifid tongue. The œsophagus was single and led into a stomach common to the two pigs. Each pig had its own large and small intestine. The pigs were males, and the genito-urinary organs were quite distinct. Two larynges were present, separated from each other by the œsophagus. On splitting the symphysis menti and separating the parts for the purpose of finding the missing mandibles, I found a tumour hanging by a pedicle from the under surface of the basi-sphenoid, consisting of two mandibles fused together, covered with mucous membrane, presenting hairs, and beset along the outer margins with teeth which had been erupted. On removing this tumour a second but much smaller pedunculated body was found independently attached to the palate. This little pedunculated body is, as a matter of fact, of quite as much importance as the larger mass beside which it hangs, and we shall consider it more in detail subsequently. The root of the tongue lies on the part nearest the pedicle. At the anterior part, near the symphysis, is a patch of piliferous skin, whilst the mandibles themselves lodge molar, incisor, and canine teeth. The pig is now preserved in the Museum of the Royal College of Surgeons.

In addition to the base of the tongue attached to the supernumary mandibles, the tongue belonging to the normal mandibles presented a bifid apex, and was intimately connected with the sides of the pedunculate mandibles.

My third specimen is from the Museum of the Royal College of Surgeons—it is the head of a pig. On looking into the widely opened mouth we find, wedged in between the upper maxillæ, a tumour presenting unerupted teeth and a piece of pilose skin ; there is also a considerable fissure in the palate. The tumour in the palate is connected by a fibrous band with a bony mass covered with pilose skin and mucous membrane, presenting unerupted teeth, lying in the floor of the mouth. This adventitious mass represents two supernumerary mandibles fused in the middle line. The tongue is double, one lying on each side of the fused mandibles.

On examining the palate we find, lodged in between the maxillæ, a teratoma comprised of coalesced supernumerary maxillæ, containing teeth, and covered with piliferous mucous membrane. This mass was directly continuous with the fused mandibles ; the connecting band was cut through when the head was divided for the purpose of preparing satisfactory sketches, as well as to show the relation of the teratoma to the facial bones.

These three specimens are of interest inasmuch as they are examples of a process termed dichotomy, which is responsible for a large number of malformations. In the first specimen the tumour is described as a teratoma, and a study of it alone would scarcely enable us to decide whether it be an impacted suppressed fœtus, or due to abnormal division of the cephalic extremity of the embryo. A study of the foal and pigs, however, clears the matter considerably, for we find the dichotomy clearly indicated, partially in the foal and perfectly in the pig, with the production of closely similar tumours.

The pharynx and soft palate are occasionally occupied by pedunculated pear-shaped congenital tumours. These tumours may arise from the basi-sphenoid, or the pharyngeal aspect of the soft palate. The interior is usually occupied by cartilage and the exterior is covered by piliferous skin, possessing sebaceous glands. These tumours have been explained in various ways, but I am not by any means satisfied with the various suggestions which have been advanced. It was with some anxiety that I proceeded to examine microscopically the small pedunculated body hanging beside the mandibles in the double pig. Histologically it conformed in every way with congenital pedunculated pharyngeal tumours in the human subject, and it is composed chiefly of fibrous tissue, covered with skin, possessing sebaceous glands. This tumour, associated with such extensive dichotomy as is exhibited in this pig, cannot fail to suggest that such tumours, occurring in otherwise normally formed mammals, are slight manifestations of a process which finds its maximum expression in some forms of duplex monsters.

Finally, the same process which produces a double monster from a single germ, acts also in a similar way upon the germs of teeth, for those malformations known as gemmation are in very many cases due to dichotomy of an originally single tooth-germ.

DENTAL SURGERY AT GUY'S HOSPITAL

By F. Newland-Pedley, F.R.C.S., L.D.S.
Dental Surgeon to the Hospital.

The Governors of Guy's Hospital have decided to open a complete Dental School as an extension of the Dental Department, and applications are, elsewhere, invited for six Assistant Dental Surgeons, Lectures on Dental Anatomy and Physiology, and Dental Mechanics ; an Anæsthetist ; and a Tutor for the Dental Students. Two of the Lectureships are already filled : the Dental Surgeon to the Hospital will lecture on Dental Surgery, and Mr. Groves, F.R.S., will undertake the lectures on Dental Metallurgy.

Anyone familiar with metropolitan hospital practice must be aware that no attempt has hitherto been made to give thorough treatment to Dental Out-patients, for the simple reason that such cases can only be effectually dealt with in a school where the labour of skilled Dental Students can be utilized under the daily tuition and supervision of a considerable special staff. Moreover the instruments and materials used in filling teeth are very expensive, and dental operations require the best possible light. A further difficulty existed in the once unsatisfactory relationship of the Dental specialty to general medicine, but by the Dental Act of 1878 it became impossible for anyone to enter the profession without obtaining the L.D.S. diploma of the Royal College of Surgeons, which requires a curriculum of at least four years. Thenceforth Dental Surgery became a recognized specialty to medicine, and the two Dental Hospitals in London developed an elaborate system of special education to meet the combined needs of Dental Students and patients. The Dental Hospital of London is admirably conducted, but it does not meet the needs of the dental departments of general hospitals, for no operation except the extraction of a tooth is performed without a subscriber's order, and Guy's Hospital alone, with its rapidly increasing annual attendance of about 5,000 Dental out-patients, could supply enough cases requiring "stoppings" to tax the resources of a Dental Hospital.

The present education of the Dental Student compels him to attend two Hospitals simultaneously, for there are no beds and no surgical or medical teaching at the special hospitals ;

and, as "Charing Cross" harmonizes its scheme of lectures to meet that of the Dental Hospital of London, the majority of Students go there, and very few indeed go to the great hospitals. The consequence is, that little is known about Dentistry in general hospitals, save what is inferred from the practice of the special departments which mainly consisted in the extraction of teeth, and it is little to be wondered at that the medical profession looked askance at a specialty of which the hospital practice seemed to be based on the theory that removal of affected organs is the suitable treatment for all diseases. Individual hospitals, notably St. Bartholomew's undertook to save a certain number of teeth, but it was generally maintained that Dental Surgery could not be practised on its lines in a special Hospital, and it must be admitted that the facilities offered by General Hospitals went far to confirm this assumption. About three years ago, however, the authorities at Guy's fitted up a small Dental Department to suit the requirements of the dentists, and since that time it has been conclusively shown that there is nothing in dental surgery which cannot be done and taught in a general hospital. A healthy reaction is afoot in favour of improved Dental Departments, and there is no reason to doubt that in time all medical students will have opportunities of observing the operations of Dental Surgery.

This may suffice for the requirements of medical education, but it does not enable even a small percentage of dental Out-patients to have their teeth preserved. Meanwhile the two special hospitals have been extended to their utmost structural limits, and it only remains to erect fresh special hospitals, or that such general hospitals as may be able should undertake the treatment of their own dental cases with the facilities offered by a Dental School, in the same way that the work of the other departments is carried on.

The Dental Student soon becomes a valuable assistant in dental operations, for before he enters a hospital he must have devoted two or three years exclusively to apprenticeship served in the work-room of a registered dental surgeon. There he acquires mechanical skill in his calling that includes not one but many crafts. In casting, moulding, carving, and the delicate work of the jeweller's art, the student learns the deft use of tools—and what are instruments but fine tools? The transition from the work of shaping porcelain teeth on the lapidary's lathe to the preparation of cavities within the tissues of the human tooth by the use of the dental engine, is an easy task, and a couple of months spent in practice upon cavities drilled in a piece of hippopotamus ivory, or in carious teeth obtained from the extracting room, fits the student to undertake the simplest "fillings" in the mouth, under supervision and from this point his progress is rapid and his aid valuable. Guy's Hospital, standing alone in a densely populated district of South London, can well include a Dental School in lieu of the present special department, and will there by be the means of alleviating a vast amount of human suffering and disease, and at the same time will offer the most advanced education to those who wish to follow Dentistry as a profession.

Instead of leading a wandering existence between a special and a general Hospital, the Dental Student at Guy's will be able to obtain his whole education beneath one roof and among Medical Students. He will receive all the benefits that occur from study in a Great Hospital instead of two small ones, and will undergo his professional training in the midst of Medical Students. Friendship thus formed cannot fail to be of inestimable value to the young Specialist at the outset of his career.

The cost of a perpetual ticket for all the lectures and practice required for the L.D.S. Eng. will be rather less at Guy's than at either of the Dental Hospitals, and special concessions are offered to such Dental Students as desire to take a Medical qualification, in addition to the L.D.S.

The number of patients requiring operation is practically unlimited, and all necessary preparations are being made to carry on the work under the most favourable conditions. The present Dental Department will be reserved for extractions, and a large room for conservative Dental operations will be built separately, having six windows in front and a glass roof.

Cases suitable for conservative treatment will be transferred from the extracting room, and their teeth will be treated by skilled Dental Students, under the supervision of the Dental Officers of the day, Nitrous oxide gas will be manufactured in the Dispensary, and laid on to the extracting room. In all necessary cases, gas alone, or in combination with ether, will be given, under the supervision of the Anæsthetist. The dental House-Surgeoncies will be tenable for six months, and be open as appointments for *qualified* Students.

The wards of the hospital always contain interesting dental cases, and numerous instances of fractures of the jaw come under treatment. The hospital undertakes to provide all dental patients subjected to surgical operations in the wards with artificial substitutes for parts removed, and many opportunities occur for students to observe the treatment of oral deformities resulting from disease, or the operations performed for the removal of growths.

The education thus offered to Dental Students at Guy's Hospital should induce many young men who contemplate entering the already crowded medical profession to adopt the specialty of dental surgery, in which youth is no obstacle to success, and the numbers of those engaged in it is decreasing.

Such candidates are advised to pass the "preliminary" register as students, and at once commence their apprenticeship to a registered dental surgeon. Two years later they will be ready to enter a hospital and Dental School. Qualified surgeons undergo an abbreviated term of apprenticeship, and are only examined in the "Special" subjects for the L.D.S. diploma.

IMPLANTATION OF TEETH.

By George Cunningham, B.A., D.M.D., L.D.S.

(*Continued from page* 13.)

Younger's Method. This now brings us to consider Dr. Younger's present method of operation, and I cannot do better than describe the operation as I saw him perform it at the clinics of the International Medical Congress. The operation was further increased in interest by the recognition of one of the English contingent in the chair as a patient. I immediately extracted a promise from our friend Gartrell, of Penzance, to give me an account of the operation from the patient's point of view. The patient was forty-eight years of age, and had lost two lateral incisors some four years ago, and had hitherto worn a partial upper plate. The alveolus was considerably absorbed, and the gum formed the usual marked crescentic depression between the central and the canine on each side of the mouth. A median incision was made from the centre of the labial aspect of the centre incisor across the depression to the corresponding centre of the labial canine, and the gums dissected from the alveolus for some little distance. After selecting two trephines, which correspond with the two principle average diameters of the root of the tooth to be implanted, he began with the larger one, estimating the depth to which he should carry it by a reference to the measurement of the length of that part of the root. He then followed with the smaller trephine, and similarly formed a cavity for the upper part of the root, and then with the giant cone bur he tapered and formed the apex and sides of the cavity, meanwhile trying the tooth to be implanted several times. In a wonderfully short time the tooth was placed in position and firmly ligatured with silk. In this case, on examining the artificial socket on the right side by means of a blunt probe, it was evident that the outer plate of the alveolus had been quite removed by the trephine, and the gum perforated on the labial aspect some distance from the margin. The socket on the left side, however, was complete on all aspects. The time occupied in preparing instruments, taking measurements, &c., was about ten minutes ; the actual time of the second operation—that is, forming the artificial socket and implanting the tooth—was only about six minutes, and the whole clinic in which the two teeth were inserted, even including delays, did not exceed three-quarters of an hour. Dr. Younger lays considerable stress upon the necessity of sterilising all instruments, syringing the mouth and the cavity with a 1/ solution of mercuric chloride. I cannot help thinking that too much stress seems to be laid upon the necessity of these antiseptic precautions. In an operation such as this in the cavity of the mouth, strict Listerism is not attainable. I do not depreciate in any way the observance of these precautions being taken ; but I think my criticism is justified when the operator, after carefully sterilising his hands, proceeded to dry them on an ordinary towel which had been freely exposed to the atmosphere. The history of the teeth which were implanted in this case was obscure ; they certainly had been extracted some time, and therefore had become perfectly dry. Previous to their being placed in the sterilising solution the pulp cavities and canals had already been thoroughly cleansed and filled with Hill's stopping, from an opening on the palatal surface of the teeth. With regard to the effect of the operation upon the patient, I must say he seemed to stand it uncommonly well, and, from my observation of this and other cases, I certainly feel that this aspect of the operation should be no great barrier to its being adopted. The tooth when first implanted had a very white, unnatural look; but a decided change was perceptible in quite a short time:—the colour becomes uniform with the other teeth in from two to six weeks. It was indeed extremely interesting to observe how implanted teeth, chosen haphazard as far as colour is concerned, become almost, if not really, indistinguishable from the normal natural teeth.

The following letter from Mr. Gartrell clearly describes these operations from a different point of view—that of the patient:

October 26*th*; 1887.

DEAR CUNNINGHAM,—In reply to your enquiry *in re* notes on my implantation case, I send you the two teeth used, and I shall be glad if you will have them examined under a microscope, and let me know if there be any pericemental membrane on them or not. They are, as you see, the right and left superior laterals, but whence they came, and to whom they belonged, I cannot say. I believe they were picked out from a lot of extracted teeth at some dentist's in Washington. Nearly all who spoke to me as to the operation were curious to know the severity as regards pain. My answer has been that it is quite as bad as having a tooth out. After the first incision, the detaching of the periosteum, before drilling the hole, was the most painful. The drilling and burring out of the socket was, however, bad enough, and got worse as it neared the end. In my case, however, I think it was worse than usual, as the whole of the outer or labial plate of the socket for the right lateral was cut away; and the instrument finally passed through the gum on the labial surface, which was afterwards held together by a stitch of silk thread. The left lateral had a very thin plate of bone on its labial surface, but the trouble with this tooth was that it was a very thick one, as you can see by looking at it, so that it came in the way of the bite. Dr. Younger tried to correct this by grinding off the cutting edges of the lower laterals, but he did not take off enough to do any good; the consequence was, that after five or six days' use the silk ligatures had slackened a little, the teeth got very loose and moved with the least possible force—such as suction in drinking, &c. The right lateral could also with very slight pressure be pushed up into the gum an eighth of an inch too far, the root pressing the gum outwards before it. The left lateral was also being constantly interfered with by the lower teeth; also the hurry sometimes in travelling prevented my taking as much care of them as I might have done at home. In fact, there ought to have been a platinum plate struck up to fit the palatal surfaces of the whole of the front teeth, with the platinum passing up over the cutting edges of the two implanted teeth, so as to protect them and to keep them steadily in their place. I got my cousin, a dentist in Ottawa,* in Canada, to tie the teeth with fresh ligatures, but they got so loose and uncomfortable that I concluded that it was useless to persevere any longer ; but I will try the operation again at home when I can get two fresh good teeth and can give proper attention to taking care of them afterwards. In my case Dr. Younger worked very hurriedly, taking about six minutes in inserting the left lateral, reckoning from the first incision to the tooth being placed *in situ.* I felt that I could have stood the pain better if a longer time was taken, but he wished to operate against time and astonish the natives. I think he made a mistake in not leaving a plate of bone on the labial surface of the right socket by drilling the hole more towards the palate. This might perhaps have interfered with the tooth taking its place in the arch properly ; in which case I think it would be better to place an artificial tooth upon a natural root at the proper angle. I should have been glad if cocaine had been tried in drilling one of the sockets, so as to note the difference in the pain ; but the whole operation was done hurriedly, and proper care was not taken afterwards, which no doubt accounts for its failures.—Yours sincerely,

J. H. GARTRELL.

Dr. Younger also performed other clinics, which I have no doubt will be duly recorded.

Dr. Louis Ottofy made an artistic implantation of a right upper incisor. The tooth replaced had been extracted some seven years. The history of the implanted tooth was unknown, but was an ordinary dry extracted tooth. The patient, on being questioned as to the pain of the operation, said it was not much, and would be quite ready to undergo it again. In this case the operator demonstrated the great utility of the Mellotte moldine apparatus, by means of which he quickly struck up a cap of thin gold plate (32 American gauge). This was fixed in the mouth with white cement, and must constitute a valuable adjunct by placing the implanted tooth under the best possible conditions for union.

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* On further inquiry, Mr. Gartrell informed me that the teeth got so loose that he could not get on with them about ten days after insertion, and on the twelfth day his cousin replaced them again, when he kept them in for another day ; then the silk ligature gave out again, whereupon he placed the teeth in the little box in which he sent them to me.

In some earlier cases which have been reported, the apical end of the canals was closed with gold screws, the ends being smooth and neatly polished. Such a proceeding seems to us not only unnecessary, but really detrimental, by causing a possible source of irritation and unnecessary exposure of the cementum ; just as in replantation, excising the end of the root seems disadvantageous.

To digress for a moment from the clinics, I spent several days in the genial society of Dr. Younger, in New York, when I had the opportunity of inspecting the results of some of his operations, performed about a year ago. I merely recite one case as being not only typical, but readily accessable. There is a man of colour, one of the *employées* at the "S. S. W." New York Branch, who had a right upper central incisor implanted on the fifth of October, 1886. The tooth replaced had been removed three years and a-half before the operation of implantation. The appearance of the gum and tooth is perfectly normal and natural. The tooth implanted was an old dry tooth, and has given the patient no trouble or bother. The patient is extremely proud of this tooth, but not unnaturally resents somewhat strongly the needless pulling about, which some hundreds of dental examiners have deemed necessary to bestow upon it.*

A very interesting application of implantation was made by Dr. Younger, in the case of the wife of a well-known dentist in New York. There was congenital absence of two laterals, which constituted in the mouth of a pretty woman a considerable deformity. The two centrals having been previously brought in opposition, two incisors were implanted with the happiest results from an æsthetic point, and with the most promising prospects from a surgical point of view.

The subsequent inflammation in such cases is usually of the very slightest, apparently causing little uneasiness to the patient. His experience is that very few patients complain very much of the pain, most of them asserting that it is not more painful than the excavation of a very sensitive cavity.

Dr Younger has implanted some two hundred teeth with, as far as he knows, some twenty failures. It is a pity, however, that this estimate of 10 per cent. of failures is not based on absolutely reliable statistics.

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* N. Y., 30th June, 1888 : This tooth is still in place and as sound as the adjoining central.—F. C. Harmstad.

It may not be uninteresting for you to know that the fee he charges for the operation is one hundred dollars for a bicuspid, and one hundred and fifty dollars for an incisor or molar implantation. The larger fee for the incisor accounted for, not by any extra difficulty of the operation but because of a greater difficulty of obtaining suitable teeth. The greatest number of implantations he has made in one month have been five, of which four were, I believe contiguous. This case he describes as being still quite a success, and a course of continual gratification to the patient. His earliest operation, which dates back over three years, is still a success.

It must be remembered that Dr. Younger's special contention is, that the life of the pericementum is capable of being resuscitated just as "mummy corn" retains its vitality for an indefinite length of time. This alleged analogy is somewhat unfortunate, for amongst botanists the statements as to the vitality of mummy seeds is as discredited as is the statement as to mummy gold fillings amongst dentists. A correspondent in "Nature," vol. 35, 1887, pp. 114, 463, 582, clearly shows that competent botanists do not accept the case of the germination of seeds taken from Egyptian tombs as authentic, and have universally condemned as utterly worthless the evidence given in support of alleged instances of the germination. The fruitful source of error has been the deception at the outset of the credulous experimentor by the Arab. One correspondent points out that the mummy wheat of one well-known traveller grew up in the form of *oats*—a plant not cultivated by the ancient Egyptians, but now grown in the land they inhabited—though this did not shake his faith in the genuine source of his supply.

To be continued.

British Journal of Dental Science.

LONDON, JANUARY 15th, 1889.

THE GUY'S HOSPITAL DENTAL SCHOOL SCHEME.

At length Mr. Newland Pedley has been able to bring before the Dental world his programme for the foundation of a new Dental School. However one may differ from Mr. Pedley all must admire the enterprise and perseverance which have carried him to a within measurable distance from the accomplishment of his scheme. That there are many weighty considerations to be cautiously balanced before we can give either an unqualified approval or express total disapprobation all would admit, but Mr. Pedley's last paper, which will be found elsewhere in our columns, certainly meets many of the objections hitherto raised against his scheme while it invests it with an air of greater feasibility than it has hitherto possessed. The future only can determine whether ultimate success or failure is to be expected. Mr. Pedley holds the experiment is worth the trying, and his contention has received the weighty support of the governors of Guy's Hospital. In discussing the advisibility of the establishment of a Dental Teaching School in connexion with Guy's Hospital it must, we think, be carefully separated from the question, whether or no similarly organized Dental Departments should be established in connexion with the other General Hospitals Upon this latter question we have already expressed ourselves, If it be granted that the necessities of the London poor are imperfectly met by the existing Dental Hospitals, any scheme which would adequately meet these wants will commend itself to all upon humanitarian principles, but we dentists have to consider the question from another point of view, and that is, whether such a scheme is likely to promote the welfare of the profession or to divide its interests; nor can it be said that such a selfish consideration should have no weight as against the redress of human suffering, and for this reason, our present machinery and resources for enlarging the scope of our existing hospitals are capable of almost indefinite developement, nor would it be a difficult matter to originate other dental hospitals in the more remote districts of London where such institutions are really needed. Hence the question becomes narrowed into this, is it best to establish dental schools as an appanage to the existing general hospitals, or to originate bran new special hospitals requiring fresh bands of financial supporters, and the numerous difficulties which daily grow more stringent about Institutions supported by voluntary contributions?

Mr. Newland Pedley answers with no uncertain reply, that from a financial point of view, everything is in favour of the Dental Departments of the general hospital scheme, and even allowing some margin for possible Utopianism on his part his contention seems valid. It remains yet to be proved however, whether what amounts to a Dental Hospital under the control and management of the executive of a General Hospital, is likely to redound to the ultimate benefit of the Dental profession. Many tell us that we dentists are simply specialists of surgery, and hold the same relation to the medical profession, that Gynœcologists, Eye-surgeons, Skin-surgeons and such-like, bear to the body politic of medicine. But such can hardly be said to be the case so long as we possess a distinctive diploma and curriculum, and exercise what practically amounts to an autonomy. Whether the changes which are likely to be effected in the Dental curriculum may not ere long be likely to invalidate this position, it is not for us to inquire at the present time, we have simply to deal with the *status quo* of Dentistry. Mr. Pedley's scheme will soon be an accomplished fact, and will be watched by all the profession with no small interest, we trust that its working may not be found to lessen the unanimity of the Dental profession, or to merge Dental interests in those of the body politic of medicine.

THE "LANCET" AND GUY'S HOSPITAL DENTAL SCHOOL.—We notice that our contemporary appears a little uncertain whether to blow hot or cold upon Mr. Pedley's scheme, but with its usual grasp of Dental Politics picks out detail upon which to animadvert. It is an error, the *Lancet*, thinks that a leading Hospital should accept as clinical teachers, gentlemen who are not members of the medical profession." This is apropos to the advertisements, that the assistant dental surgeons are required to hold only the L.D.S.

DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.—The annual dinner of the above club will be held at the Holborn Restaurant, on Saturday, March 2nd. The chair will be taken by Sir Edwin Saunders. Tickets, 5/6, can be obtained of either of the Hon. Secs.

THE TEETH OF THE APACHE INDIANS.—According to Dr. Corbusier, the teeth of these people are often decayed, but not affected with tartar. These Indians do not maintain their stolidity under minor surgical operations, the extraction of a tooth almost always eliciting a groan or a yell.

CAPSICUM AS A COUNTER IRRITANT.—Buy a "Benson Capsicum Plaster," shellac the back of it, cut off, in pieces of size suitable to the case in hand, and, if only gentle stimulation is required, apply as it is. Should you wish more decided action, add a few grains of capsicum, which will adhere to the sticky surface. Should you desire to use other medicines, press a small wad of prepared cotton or paper fibre lint to the sticky side of plaster, trim to suit, and moisten with any tincture or combination you please. This is also an effective way of applying cocaine. Apply moistened pads to the outside and the inside gum, hold with thumb and forefinger,or with properly bent piano wire. This we owe to Dr. Rohland writing in the Archieves of Dentistry.

A Cheap Matrix.—Recently Dr. Sloan writing in the *American Journal of Dental Science*, says, I have been successful with a matrix which I think will be of value to dentists who do not make gold crowns, and for patients who cannot pay for them, but who are willing to pay a moderate fee for saving badly decayed and broken molars. It is made from the composition silver strips that come for polishing between the teeth. One of the proper width is selected and cut a little longer than the circumference of the tooth to be treated. It is bent around it with the fingers and the ends punched together with a pair of pliers, drawing it tight. It is then removed and placed on a mandrel. My mandrel is a round steel 7 in. long, 5-8 in. diameter at the large end, and 4-8 in. at the small end. The ends of the band are folded over similar to the way a stove pipe seam is made. If the fold is not strong enough to hold, dip a piece of No. 60 tinfoil in soldering fluid, lay it on the seam, and hold it in the flame of an alcohol lamp. It will be soldered. Adjust the band on the tooth. If it fits, have the patient close his mouth to see that the articulation is all right. Now if the tooth is all prepared fill with amalgam. When full take a wad of cotton and press the filling with it—using your thumb. It will make the filling very compact, and bring the surplus mercury to the surface. Do not remove the band, but instruct the patient to call the next day or week and have it taken off. What I claim for this matrix is, it can be left on the tooth till the filling is hard. It is not expensive or hard to make. It is unequalled in filling large cavities with thin, frail walls by grinding down the walls and building the filling up over the edge, making the whole grinding surface of the tooth amalgam.

Saccharin and its value as a food.—Dr. Thomas Stephenson and Dr. Woolridge have made a series of experiments for the purpose of determining whether Saccharin is poisonous when given even in excessive quantities and whether it interferes with the digestive processes when used in moderation. They report (*Lancet*, Nov. 17, p. 958) on the first point that two grams were given daily for five days to an underfed dog without any inconvenient results being observed, and that mice ate *ad libitum* food mixed with large quantities of saccharin without manifest influence on the health. In testing whether the antiseptic properties of the compound have the effect of stopping the action of organized ferments it was found that a 0·1 per cent. solution had no retarding influence on the peptic digestion; that a 0·25 per cent. solution slowed the process decidedly; and that a 1 per cent. solution greatly retarded it. But it is pointed out that a 0·1 per cent. solution of saccharin is the sweetening equivalent of 30 per cent. of sugar, an impossible dietetic quantity. The diastatic solution of starch was not hindered by 2 per cent. of saccharin. The ammoniacal fermentation of urine was retarded when saccharin was taken or added to the urine after excretion. Putrefactive decomposition of a pancreatic digestive mixture was not prevented by the admixture of 1 per cent of saccharin. As experiments like the foregoing do not reproduce exactly the relations which would exist between the two factors in the stomach, experiments were made upon living animals, and it was found by *post-morten* examination, that the ingestion of a gram of saccharin, equal in sweetening power of over eight ounces of sugar, had not in the least interfered with the digestion of a dog. The authors conclude (1) that saccharin is quite innocuous when taken in quantities largely exceeding what would be taken in any ordinary dietary; and (2) that saccharin does not interfere with or impede the processes of digestion when taken in any practicable quantity. To this they add their personal experience that saccharin may be taken for a considerable period without interfering with the digestive and other bodily functions.

Manipulative Miscellany.

All new instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being, to give practitioners a description of everything new, on its own merits, and without any intention, or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

ABSORBENT DENTAL NAPKINS.

(Seabury and Johnson.)

A number of absorbent and antiseptic Dental Napkins have been sent us for examination by Messrs Seabury and Johnson. They are of a convenient size for Dental practice and are sold in neat boxes containing 100, cut and ready for use.

They are found extremely useful where the rubber-dam cannot be used—cases which usually are very troublesome on account of the rapidity with which ordinary napkins become saturated.

ABSORBENT COTTON, ETC.

From the same firm several varieties of Medicated Cotton have arrived. The Absorbent Cotton that has been submitted to us is of excellent quality, clean, and highly absorbent. There have been examined also borated and salicylated cottons—these are inodorous—Carbolated and Iodoform cottons which very distinctly give forth their peculiar odours. Each variety can be recommended as trustworthy, and it would certainly add to the efficiency of our work if one of these medicated cottons was always used in the dressing of teeth, especially of roots.

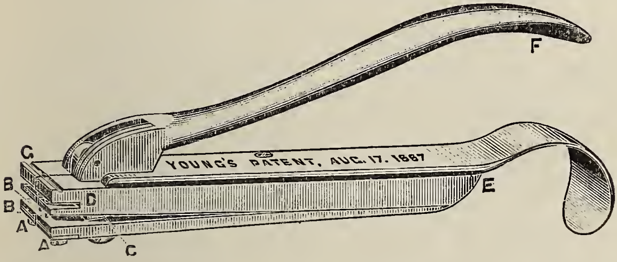
A Styptic Cotton which we have examined will be found useful for plugging after extraction in persons of doubtful hæmorrhagic diathesis.

DARBY'S CAPSICUM PLASTERS.

(Seabury and Johnson.)

These plasters have been before the profession for some time and those who have used them are unanimous in their enconiums. They are probably the safest counter-irritants in the hands of the profession.

YOUNG'S PATENT "ADJUSTABLE' PERFORATORS.



This instrumennt has been designed to punch two holes at once and to secure exact correspondence between the holes in the metal plate used for backing teeth. It also overcomes the difficulty of disengaging without twisting or bending the plate.

The lower lever E consists of two parts ; one part is movable on the pin shown on the upper surface of lower handle. In the groove G are two punch holes, one in each lever and on a level with each other. One of the pins of the tooth to be backed is placed in the nearest hole, and by pressing at E the lever is moved until the other pin slips into the corresponding hole. The plate is placed in the slotted recess D, and the holes punched. The pins can be replaced with ease by taking out screws A.

It will be readily seen that this is a very clever invention and although it may appear to be a little complicated, the instrument is in reality as simple in its working as it well can be. Beyond this it economizes time and perforates the plate with neatness and accuracy.

Abstracts of British & Foreign Journals.

INDEPENDENT PRACTITIONER.

SUPPLEMENTARY TO THE REPORT OF THE COMMITTEE OF DENTAL MATERIA-MEDICA AND THERAPEUTICS.

By L. G. Noel, M.D., D.D.S., Nashville, Tenn.

It deals first with pain obtundents—local anæsthetics. The most important agents used for this purpose: Chromic acid, chloride of zinc, cocaine, iodoform, menthol, aconite, veratrina, and the refrigerants. The two first are not likely to be used much, on account of their irritating action upon the dental pulp. The refrigerants, sulphuric ether and rhigolene, as applied by the atomizer, are very useful obtundents, but many patients object to the first shock of pain attending their application. Professor Henry J. Bigelow introduced rigolene as a substitute for ether, claiming, on account of its greater volatility, to obtain a lower temperature with it than could be produced with ether. This agent has not given such satisfactory results as ether. In the extraction of roots the pain is thus greatly reduced. It is especially applicable to roots situated in the superior maxilla. It seems to induce an excessive flow of saliva, and in the lower jaw this soon overflows the parts to be operated upon, necessitating frequent pauses for ejecting the accumulated fluids. Veratrina (veratrum sabadilla.) Dr. E. A Bogue, of New York, has used it with good results as an obtundent for sensitive dentine. He gives the following formula:

Veratrina	gr. iv.
Tannic acid	gr. j.
Alcohol	gtt. xx.
Glycerine	fʒj.
Carbolic acid	ʒji—M

Thoroughly dry the tooth and apply to the sensitive surface. Aconite has been found more useful for its analgesic effects in cases of pulp exposure and inflammation of the periodontal membrane. Menthol has been advocated for sensitive dentine, but is of more value as a remedy for neuralgia in conjunction with the oil of cloves, or cajuput. Thus :

R Menthol,..............gr. v.
Oil of Cloves..............f℥j.
(or " " cajuput)..............

Cocaine has been over lauded. The hydrochlorate of cocaine is the preparation most used. This is freely soluble in alcohol, water and ether. Dr. Gordon White uses a saturated solution of cocaine hydrochlorate in ether, and thinks this the best preparation of cocaine for sensitive dentine, or pulp extirpation. This is a modification of Herbst's obtundents, but as the simple etherial solution cannot be so quickly obtained, requiring time and trituration, the Herbst's combination is a key to the difficulty,*i.e.*— sulphuric acid. To make Herbst's obtundent, first get a saturated solution of cocaine hydrochlorate in chemically pure sulphuric acid, and add sulphuric ether to the point of saturation, allowing the excess of ether to escape by evaporation. Creosote and carbolic acid are efficacious for that form of odontalgia arising from exposure and inflammation of the pulp. He prefers pure wood creosote. When these agents are applied to the pulp in full strength, a thin film of coagulated albumen is formed upon the surface that, by some, is thought to be a protection from further irritation. The writer prefers the undiluted drug. Both creosote and carbolic acid are freely soluble in alcohol, ether and chloroform. Carbolic acid dissolves readily in water, but creosote is only slightly soluble in water. Solutions of these agents are found valuable as deodorizers, germicides and reactive stimulants, and have been much used in the treatment of alveolar abscess, diseases of the antrum, purulent inflammation of the gums, alveolar pyorrhœa, etc., etc. Dr. J. S. King, of Pittsburg, has had the best results in pulp capping with a paste composed of white oxide of zinc and creasote in full strength. This he applies directly to the exposed organ, then over that a covering of oxychloxide of zinc. This application is very soothing to the pulp, but oxyphosphate as a foundation for the filling is preferable.

Arsenic.—The violent pain that it produces in the first stages of its action lasting, as it often does, two or three hours, may be almost entirely prevented by a combination with other drugs. Dr. E. C. Kirk has suggested a nerve paste composed of arsenic and cocaine hydrochlorate, and gives the following formula :

R—Arsenious acid in fine powder.
Cocaine hydrochlorate a. a. gr. xx.
Menthol crystals gr. v.
Glycerine enough to make a stiff paste.

An improved formula is :

R—Arsenic in fine powder.
Cocaine hydrochlorate, a. a. gr. xx.
Creosote, q. s. to make a stiff paste.

Antiseptics.—Heat is one of the most valuable of all antiseptic agents. Dr. Allport applies heat to the canals of pulpless teeth with a smooth nerve canal broach with a bulb upon the shaft that may be heated in a spirit lamp, furnishing a reservoir of heat, such as a light steel broach could not otherwise retain. The following list includes the best antiseptics. Chlorine, zinc chloride, calcium chloride, iodine, bromine, salicylic acid, oil of cloves, oil of thyme, oil of eucalyptol, carbolic acid,creosote,resorcin,boric acid,naphthalene,naphthol, hydronaphthol, iodoform, iodol, hydrogen dioxide, and mercuric chloride. In the antiseptic treatment of pulpless teeth, the mercuric chloride is the agent with which we wish always to begin our treatment. Dr. Bronson, advised dipping the drill with which the pulp chamber is opened into a solution of corrosive sublimate. The writer prefers after, as thorough washing with the syringe as possible, to wipe out the canals with a solution of the mercuric chloride (gr. 1 to ℥i. water). This will entirely destroy all surface micro-organisms, and if the teeth have not become sore will prevent inflammation of the pericementum, and possibly alveolar abscess. Thus by keeping at hand powders containing mercuric chloride, ammonium chloride a. a. grj., a solution may be readily prepared by adding one of these powders to an ounce of distilled water. Another method is to take of corrosive sublimate and hydrochloric acid of each one drachm, distilled water enough to make one ounce. This forms a perfect and permanent solution. One teaspoonful of this to a pint of water makes a solution of one to 1,000. This is strong enough to use as a sterilising fluid in general surgery, and an excellent preparation for washing out the pus sacks of alveolar abscesses, the antrum, or the pus pockets about those teeth affected with pyorrhœa alveolaris. Iodine is valuable in the treatment of alveolar abscess, the compound tincture injected full strength through the pus tract, often works a complete cure after one application. The compound is better than the simple tincture for cleaning and disinfecting root canals. It is less irritating. It is a valuable application to the pus pockets about the teeth affected with alveolar pyorrhœa. Iodoform is a valuable germicide and disinfectant, but its unpleasant odour is very difficult to disguise. Dr. Pierce uses iodoform as a canal dressing after the following formula :

R.—Iodoform.
Oil of cloves.
„ „ eucalyptol, aa ʒ vj.

Dr. E. C. Kirk makes a paste of iodoform with cinnamon oil, thus disguising its offensive odour. Iodol—Tetraiodopyrol—is an efficient germicide without toxic properties, and whilst closely allied to iodoform, is free from its objectional odour. It is nearly insoluble in water, but very soluble in absolute alcohol, ether, chloroform and carbolic acid. It contains 90 per cent. of iodine.

Hydronaphtol.—This is a derivation of the hydrocarbon naphthalene. It appears in light fawn coloured, crystalline flakes, have a slight odour and taste. Dr. Leffman says : "It does not appear to have the power to destroy already existing germs or their spores, but to possess merely an inhibitory action upon their development." Dr. James Truman, uses it in a mouth wash to be used in any case of diseased gums, whether caused by an uncleanly, illfitting plate or accumulations of tartar about the teeth. Hydrogen dioxide—peroxide of hydrogen—hydrogen dioxide is a syrupy liquid, easily decomposed and decidedly caustic. It is soluble both in ether and water. It is valuable in the treatment of Pyorrhœa alveolaris. Dr. Black has used hydrogen dioxide in combination with mercuric chloride as an injection for alveolar abscess and other treatment requiring antiseptic and germicidal effects. His formula is :

Hydrogen dioxide............f℥j.
Mercuric chloride............gr. ij.

Zinc Chloride.—This has been used as an obtundent of sensitive dentine, but is of more value as a disinfectant. It is used with good results upon diseased gums, entering as an important ingredient into mouth washes. Boric acid possesses valuable antiseptic and germicidal properties. It is used in the treatment of aphthous ulcerations of the mouth and fauces, and is of great value in cases of catarrh and follicular laryngitis, rapidly correcting the intense fœtor of the breath when properly brought to bear upon the diseased parts. This may be accomplished by the inhalation of the vaporized solution. As a mouth wash and gargle it is employed in a solution of about 20 grains to the ounce of water.

Literary Notices and Selections.

THE SUPPRESSION AND SPECIALISATION OF TEETH.

By John Humphreys, L.D.S.I.,
Lecturer on Dental Anatomy and Physiology Queen's College, Birmingham.

(Read before the Birmingham Philosophical Society, April 12th, 1888.)

The suppression of different structures from disuse has been graphically described by Darwin throughout his works.

In the examination of the teeth of Mammals I have been much impressed by this fact, and thought probably a tabulated record of the diminution in size, and final disappearance might prove of interest.

Throughout the Mammalia teeth are divided, for purposes of convenience, into four groups, viz :—Incisors, canines, premolars, and molars, which are limited to the intermaxillary, maxillary, and lower mandibular bones.

This separation into classes was curiously foreshadowed by a class of flesh-eating reptiles discovered in the Trias, in South Africa, and which were assigned a separate order by Owen, who designated them Theriodonts. They possessed incisors separated from the conical molar teeth by powerful canines, thus anticipating by an immense period of time the specialisation of teeth in the Mammalia.

Incisors are confined in the upper jaw to the intermaxillary bone, and immediately behind the suture are situated the canines, behind which, in backward series, are the premolars and molars. In the lower jaw they are similarly designated, but there being no intermaxillary suture, it is somewhat difficult at times to determine their true character. Incisors are generally chisel-like teeth, with sharp, cutting edges for biting and slicing food, but canines, as a rule, are strong, pointed, conical teeth, very firmly implanted into the jaws, used by animals for grasping and tearing their prey.

Premolars occupy the space between the canines and true molars, and vary much in shape, the hinder ones, however, bearing a close resemblance to the molars.

Molars occupy the hinder portion of each jaw, their office being to comminute and grind the food ; varying in pattern to suit the lives of the animals, whether flesh-eating, grass-eating, or insect-eating creatures.

The commencement of the Tertiary period witnessed the advent of a period rich in varieties of mammalian life, and which produced types from which the forms now existing have evolved.

In Eocene times the typical mammalian dentition appeared to have been 44, made up of incisors $\frac{3-3}{3-3}$ canines $\frac{1-1}{1-1}$ premolars $\frac{4-4}{4-4}$ molars $\frac{3-3}{3-3}$

The Ungulates were tolerably constant to this number. The homalodontotherium, a creature described by Professor Flower ("Philosophical Transactions," 1874), possessed not only the full typical dental formula, but one extremely interesting to the dental anatomist.

The teeth were arranged in an unbroken curve in both jaws with no diastoma between ; no tooth was above its fellow, but a very gradual alteration in form took place from the incisors in front to the molars behind ; this is a characteristic possessed at the present time by man alone.

At the foot of the scale of Mammals is the singular division Menotremata, represent by the duck-mole (*Ornithorhyncus platypus*), and the spiny ant-eater (*Echidna*), both inhabitants of Australia ; the latter is edentulous, and the dentition of the former is so modified as to be quite unique. Instead of teeth, the front part of the bill is occupied by a plate of cornified tissue on either side of each jaw, answering to the purpose of incisor teeth and the hinder part of the mouth is occupied by similar plates which do duty for molar teeth. Upon the base of the tongue are situated two singular conical teeth, but for what purpose they are used is not certain.*

Ascending a little higher, we meet with creatures of a degraded type, represented by the Edentata or creatures poor in teeth. These are of a monodont character; they are of the simplest possible pattern, generally rootless cones destitute of enamel; no tooth differs from another, and there is apparently no separation into incisors, canines, and molars. In the armadillos they interdigitate, and the dentine being unprotected the enamel is rapidly worn away, and sharp edges are always maintained. Sloths and ant-eaters are likewise included in this group.

The teeth vary in number from thirty-two in ordinary armadillos, to one hundred in pliodon.

Sloths, which at the present day are of puny size, were once represented by the gigantic mylodon and megatherium, but the teeth of all were of the same simple character.

The front part of the mouth is devoid of teeth, but some armadillos possess a pair upon the outer margin of the inter-maxillary bone. Throughout the family, however, there is no attempt at specialisation, and the majority of ant-eaters are quite edentulous.

Turning to the Cetaceans, we find the dolphins possessing an array of two hundred teeth, but all of a simple conical form. In the porpoise they are similar, but smaller and fewer; while the grampus shows a still further diminution.

In the Balænidæ, the whalebone whale is quite edentulous, the teeth being replaced by baleen plates, placed at right angles across the mouth, with fringed edges, which hang down and act as a gigantic sieve, entangling the small mollusca, which form its food, when the mouth is closed, and the enormous tongue strains the sea water out, clearing away its intercepted prey. The whale offers an interesting instance of the total suppression of teeth, their place being supplied by an exceedingly useful device in the shape of baleen plates.

But in the fœtal state there are developed in open, alveolar grooves, a number of denticles, conical in form, and smaller in front than behind; at the back of the mouth two are often found united, forming a compound tooth. They are never

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* Since reading the above, an interesting communication has been forwarded by E. B. Poulton, M.A., to the Royal Society, describing the discovery of a number of tooth germs in both jaws of the Ornithorhyncus, bearing a close resemblance to ordinary mammalian teeth, which were situated in the deeper epithelial tissues below the horny plates.

thoroughly calcified, and disappear before birth, but they are interesting as pointing to the remote history of the whale, when its environment and diet differed much from the present.

In the bottle-nosed whale (*Hyperoodon bidens*) the suppression is not so complete, for though in both jaws may be found a number of functionless, rudimentary teeth ; in the front of the lower two strong conical teeth are still retained.

In the narwal (*Monodon monoceros*) the teeth are entirely suppressed in the female, but the male possesses in the front of the mouth a formidable tusk, from ten to twelve feet in length with spiral grooves running its entire length, which is evidently intended as a sexual weapon, as in the female the germs of both incisors are present, but are calcified inside their sockets, and never erupted, as is the case likewise with the remaining tooth germ in the male.

It is impossible in the present limited state of knowledge to point to any one archetype from which the various groups of Mammals have shaded off ; for beyond Eocene times, stretching into the remote past, far away into the Trias, we find instances of Marsupials distinguished by great numbers of teeth of a simple pattern, and probably of insectivorous habits, as the microlestes and amphitherium ; but the beginning of the Tertiary period ushered in the commencement of an abundant mammalian life, and we possess sufficient geological evidence to prove that specialisation of teeth, accompanied in many instances with a diminution in number, has occurred side by side with increased cranial capacity ; for creatures of the megatherium and mylodon type, and helpless Ungulates, as the homalodontotherium and anoplotherium, would fall an easy prey to the small and fiercer Carnivora, and thus we find that certain teeth became enlarged and developed as weapons of offence and defence.

All teeth appear to be modifications of the simple cone pattern ; this is evident by the study of the teeth of the more degraded Mammals or others where, from disuse, teeth with complex patterns are no longer required.

In the former category may be included the armadillos, whose teeth are laterally compressed cones, and in the latter the porpoise and elephant seal, whose teeth have likewise reverted through disuse to the primitive conical form.

Those, also, in course of suppression exhibit the same characteristic, as the supernumerary teeth, the lateral incisors in man, and the upper wisdom teeth, which are often degraded to mere pegs, all showing the tendency of reversion to the parent type.

The same may be said of the tiny first premolars met with throughout the Carnivora, the minute third premolars in the upper jaw of the squirrel, the inner rudimentary pair of incisors in the rabbit, and the small first upper premolars of the fruit bat.

Many causes have produced the various types of teeth in Mammals.

1st, Lateral compression.
2nd, Elevation of basal ridge or cingulum.
3rd, Union of denticles.
4th, Plication of margins.
5th, Bifurcation of roots.
6th, Production of accessory roots.

1. *Lateral Compression.*—Many incisor teeth and some premolars are thus formed, the tendency to flattening of the developing tooth germs being brought about probably by the action of the tongue pressing outwards, and the muscular compression of the lips inwards.

The incisors in man, and the lower incisors in ruminants, together with the premolars in the Carnivora, and the anterior premolars in the pig, are excellent examples of cones flattened by lateral compression.

2. *Elevation of the Cingulum.*—The elevation of the basal ridge to form an inner cusp is exemplified on the lingual surface of many upper lateral incisors in man, and frequently the upper canines are quite bicuspid from the production of a lingual cusp.

There is very little doubt that the bicuspids have been formed by this method, as in the first lower premolar the inner cusp is most feebly produced, the elevation of the cingulum being hardly worth the name of cusp.

Human molars evidence this fact by the frequent formation of additional cusps upon the lingual surface. (See paper written by Professor Windle and myself upon "Extra Cusps in Human Teeth" in "Anatomischer Anzeiger," Jannuary, 1887.)

They occur principally upon the first upper permanent molar, and sometimes upon the second deciduous upper molar, changing the crown from a quadricuspid to a quinquicuspid form.

Many superior incisors in the Carnivora exhibit this characteristic most markedly, while in the mole the elevation of the basal ridge has altered an ordinary four-cusped tooth to one bristling with a multitude of additional cusps, and in the fruit bat the molars are rendered bicuspid from the same cause.

The raising of the cingulum at the anterior and posterior borders has modified the simple compressed cone in the Carnivora to the carnassial molar form. It is interesting to trace the complication of the pattern from the simple teeth of the elephant seal (*Cystophoca proboscidea*), through the common seal (*Phoca vitulina*), to the molars of the saw-toothed seal (*Stenorhyncus serridens*) by this means.

It is stated by Baume that seals with simple conical teeth represent the species of the oldest aquatic Carnivora, while those with teeth of a serrated pattern represent creatures whose old mammalian tooth characteristics are in course of suppression, and have consequently taken to the sea at a later period of time.

Occasionally we see one or more teeth in the porpoise quite bicuspid from the elevation of the basal ridge.

The additional pillar formed in the groove on the inner border of the molars of some ruminants, and the additional cusps upon the hinder molars of monkeys, as the *Cynocephalus maimon*, have the same origin.

3. *Union of Denticles.*—The molar teeth of many rodents are fashioned by this process, as are those of the rabbit, short-tailed field mouse and capybara, and the large molars of the wart hog and elephant.

In the wart hog the tooth is composed of a number of circular denticles of dentine, covered with enamel, which are fused together with a thick cement ; the constituent portions being of unequal hardness, the dentine and cementum are more quickly worn away, leaving the surface coutinually rough, and suitable for grinding its food.

The molars of the elephant are somewhat similar in design, and are made up of a number of flattened plates or denticles, each plate being covered with enamel, and its interior filled with dentine, while the fusion into the large compound tooth is effected by cement in like fashion to the wart hog.

The hinder fœtal teeth of the whalebone whale frequently exhibit the same characteristic ; in the front of the alveolar groove they are simple conical teeth, but at the back of the mouth two denticles are often fused together.

4. *Plication of Margin.*—The molar teeth of rodents are instances of such a process, which may be demonstrated by an

examination of the family, from the simple pillars of the rabbit's teeth to the more complicated forms met with throughout the group.

In the lower molars of the gerbille (*Meriones indicus*) the first tooth is circular in the pattern of its crown, the second slightly inflicted upon its external surface, while the third is inflicted upon both aspects.

In the field vole the convolutions of the crown are quite serpentine in character, and in the guinea-pig they almost separate the tooth in halves.

The undulations in the jerboa and beaver are very contorted, while in the porcupine they are not only wavy in outline, but enclose small inner denticles.

The molars of ruminants present a great variety of patterns formed by the undulations of their margins.

In the giraffe the tooth is divided into halves by the crescentic arrangement of the enamel ridges, the inflection being so produced at the centre as almost to subdivide each section.

In the lower tooth this has apparently occurred, for we find instead of the contorted arrangement in the upper, the enamel ridges have arranged themselves into four islands.

In the megaceros this is further exemplified, for while the centre of the upper tooth is occupied by an inner bi-crescentic island, in the lower tooth the island is divided in twain.

The complicated molars of the horse belong to the same category, and by comparing it backwards through the hipparion, it is not difficult to understand its structure as a modification and development from the palæotherium type.

(*To be Continued*).

A good cleansing soap for laboratory, or office either, is made by mixing one pound of bar soap, one-half pound of soda, one pound of pumice, one pint of water, and a few drops of such essential oil as you like. Slice the soap, dissolve over heat, add soda and pumice, and mix well together; let it cool and slice into cakes.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, Held December 3rd, 1888.
Mr. S. J. HUTCHINSON, M.R.C.S., L.D.S., *Vice President*, in the Chair.

THE Minutes of the previous meeting having been read and confirmed,

Mr. Edward A. White, M.D.Edin., M.C.Aber., L.D.S.Edin., L.S.A., of 1, Highbury Place, N., having signed the Obligation Book, was formally admitted to membership by the Chairman.

Mr. J. W. Shillcock, L.D.S. Ire., of 1, Rue Bössu, Cannes, France, was ballotted for and elected a non-resident Member of the Society.

The Librarian (Mr. Felix Weiss) announced that a work, "L'Art Dentaire," by Dr. Kühn, had been received and added to the Society's Library.

The Curator (Mr. Storer Bennett) presented to the Museum the skull of a Paca (*Cœlogenys paca*), a rodent of which there was no example in the Society's collection. It would be noticed how enormously developed were the zygomatic arches, being produced to such an extent as to completely hide the molars of the lower jaw when the maxillæ were articulated. The zygomatic enlargements were seen to be hollowed out internally so as to form a large cavity on each side, lined by mucous membrane, and communicating with the mouth by a small opening. The function of the cavities, however, was unknown, unless it was to lighten what would otherwise be a very heavy mass of osseous tissue, in a similar manner to that in which the antra of Highmore, the sphenoidal sinuses, &c., acted in the human subject.

The Chairman then called upon Mr. Bland Sutton for his communication. (See page 56.)

Discussing Dr. St. Geo. Elliott's paper. (See page 52.)

Mr. W. E. Harding (Shrewsbury) asked whether it made any difference if the copper was precipitated in iron or zinc.

Mr. Amos Kirby (Bedford) said that the results which he had obtained from his own experiments were different from those of Dr. Elliott. In all cases he found silver amalgams expand considerably, that precipitated silver and coin silver both expanded ; when placed in the tube they either split the tube open or projected from the orifice. When measured with a micrometer some showed as much expansion as 1 in 25 of the diameter. The only way he could account for the difference between Dr. Elliott's results and his own was that he (Dr. Elliott) spoke of his silver amalgam as containing 10 per cent. of copper ; Mr. Kirby found that the addition of any other metal modified the action considerably.

Dr. Elliott, in reply, said, with regard to Mr. Harding's question, he had never used iron, and therefore could not say. With regard to the expansion of silver, he was aware that it was an accepted opinion that it *did* expand, but he could only say that he had made some 300 experiments simply hunting for expansion and had not found it. Of course he could only speak from his own experience ; others might be more successful. Then, with regard to what Mr. Kirby had said, the fact that he (Dr. Elliott) used silver and copper while Mr. Kirby used silver only would be, he thought, a possible, but not a probable explanation of the difference of their results.

Mr. W. E. Harding mentioned a case of tooth fracture, stating that in the previous week a patient, aged just seventeen, came to him and told him that last January she fell down and fractured a front tooth ; it was broken in two pieces, the fracture extending in a perpendicular direction. On extracting the tooth he found that the two halves had become united by secondary dentine. The fracture extended across the pulp chamber.

The Chairman said they were very much indebted to Mr. Harding for his communication ; if he could let them have the tooth, the Curator would no doubt make a microscopical examination of it, and determine the exact condition of things.

Mr. Harding offered half the tooth, a compromise which was accepted.

The Chairman then called upon Dr. Mitchell for his paper on Metal Cap Crowns.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

At the Annual General Meeting of the Society held Jan. 14th, the following Members were elected as Officers and Councillors for the year 1889:—

President, Henry Sewill.

Vice-Presidents, (resident) J. H. Mummery, W. F. Forsyth, Felix Weiss. (Non-resident.) G. C. McAdam (Hereford), J. Cornelius Wheeler (Southsea), W. Bowman Macleod (Edinburgh).

Treasurer, Thomas Arnold Rogers.

Librarian, Ashley Gibbings.

Curator, Storer Bennett.

Editor of the Transactions, Walter Coffin.

Honorary Secretaries, C. J. Boyd Wallis (Council), E. G. Betts (Society), J. Ackery, (for foreign correspondence).

Councillors, (resident). John Fairbank, David Hepburn, Ashley W. Barrett, R. H. Woodhouse, L. Matheson, W. Scott Thomson, C. S. Tomes, Willoughby Weiss. W. H. Woodruff, (non-resident). E. Apperley (Stroud) J. H. Redman (Brighton) R. Wentworth White (Norwich) T. C. Parson (Clifton) R. T. Stack (Dublin) F. J. Vanderpant (Kingston-on-Thames).

Dental News.

VICTORIA DENTAL HOSPITAL.

At the annual dinner of the students connected with the Manchester Victoria Dental Hospital was held at the Grand Hotel, Manchester. The president, Mr. Henry Planck, L.D.S., occupied the chair. There were also present Mr. W. Simms, Professor Young, Mr. P. Shaw, Dr. Stallard, Mr. J. W. Seville, Mr. W. Headridge, Mr. I. Renshaw, (Rochdale), Mr. C. H. Smale, Mr. H. T. Dreschfeld, Mr. G. G. Campion, and others.

The toast of "The Queen, the Prince and Princess of Wales, and the rest of the Royal Family," having been drunk, Mr.

W. Simms gave, "The Owens College." The city of Manchester and the northern counties, he said, owed much to the memory of John Owens, who, 40 years ago, left £100,000 to assist the cause of higher education, and whose example had induced other good men to follow his example. Owens College was an institution well worthy to occupy one of the foremost places in the educational institutions of this country. The characters of the professors of the college and its present position were sufficiently indicated by the number of young men who crowded its doors. The last calendar gave 1,317 names enrolled as students. There was room for closer identification between Owens College and the Victoria Dental Hospital, and he knew that Mr. G. Campion and Mr. Tanner would do all they could to bring the two bodies to work more harmoniously and successfully together in the future.

Dr. Young, in responding, said he thought the Owens College looked upon the Dental School in Manchester—in its broad sense—very much as the head of a household regarded some addition to the family circle. More than ordinary interest was manifested in its growth and prosperity. All things considered, the Manchester Dental School had been a success. It had established itself on a firm and solid basis. It would go on and equal, if it did not surpass, the success fairly claimed by the Medical Department of the Owens College. (Applause.) Much might be accomplished by combination, and he would suggest that by continued combination and by bringing forward the interests of dental education and representing them in the proper quarter they might influence the Owens College accordingly. He thought attention might be called to the anomalous position of dental students who, at present, were compelled to attend two winter courses of lectures on anatomy, besides subsequent special lessons, a requirement which did not obtain in any other profession, and which would very well admit of curtailment in the dental profession. By combination on their part the curriculum might be brought within more practical limits and made much more acceptable. (Hear, hear.) The Victoria Hospital, he thought, owed its origin more to the educational instincts of the times than to mere charitable needs.

Mr. P. Shaw gave "The Medical Profession," and said Manchester was as well represented in this present respect as any city in Europe. (Applause.)

Dr. Stallard replied. They were proud, he said, of their medical school, but speaking from a dental point of view it would not be many years before they would be equally proud of the dental hospital. They had difficulties to contend with, but these in time would be overcome. The connection between the medical and dental profession who had previously qualified as medical men.

Mr. J. W. Seville proposed "The staff of the Victoria Dental Hospital," which was drunk with musical honours.

Mr. W. Headridge replied.

Mr. Renshaw (Rochdale) gave "The past and the present students of the Victoria Hospital," to which Mr. C. H. Smale, junr., responded. The remaining toasts were, "The Guests and Visitors," and "The President."

APPOINTMENTS.

Mr. F. R. Howard L.D.S. Eng. has been appointed House Surgeon to the Birmingham Dental Hospital.

Mr. R. S. N. Faro had been appointed Assistant House Surgeon to the National Dental Hospital.

Dental Advertising—The ingenuity displayed by dental advertisers is, says the *Lancet* sometimes so great that it seems a pity it is not directed into more worthy channels. One of the latest devices is to advertise as being "Surgeon-Dentist to the Queen's Household." The Hon. Secretary of the British Dental Association, applying to the Lord Chamberlain, received the reply that the gentlemen referred to had no appointments of any kind which entitled them to thus style themselves, but that the matter does not come under the Act dealing with the unlawful assumption of the Royal arms.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

THE SUPPRESSION OF QUACKERY.

To the Editor of the "British Journal of Dental Science."

Sir,—Why should not the provisions of the Dentists' Act be immediately enforced, so putting an end to quackery, and thus diverting the current of wealth from the obnoxious advertiser into the legitimate and honourable hands of our profession? Its enforcement could not fail to purify and divorce the respectable dentist from the scum. Can we not as one man obtain a sufficient sum of money to finally put a stop to such a state of things which is now yearly becoming positively alarming? I firmly believe "what do our legal advisers say" that the advertiser and exhibiter of Dental specimens come under the ban of unprofessional conduct and so directly under clause 13 of the Act. If such is the case, then the Medical Council can call upon the Registrar to erase the offenders from the Register; and further, if they or others practise as, or in imitation of the dentist then they would finally come under clause 3. It seems to me the acme of simplicity to throw off this accursed yoke of dental quackery, and with it a deplorable amount of real poverty and desperation within the respectable portion of our ranks all over the three kingdoms, excepting—perhaps many don't care practitioners in wealthy practices in London, Liverpool, Glasgow, Dublin, and other good seaports and towns adjacent. But to do this disagreeable work successfully (enforcing clause 3), we must have money sent ungrudgingly from one and all, also abundant help from the esteemed editors of our and kindred publications, thus making it known far and wide. I firmly believe money which would doubtless be the motor power of the invasion would flow in not from dentists only, but from our medical brethren, and would be found sufficient for all legal and other purposes to fight such a powerful foe. It should be began promptly, and carried out faithfully, and also without hesitation, or our cause, which would succeed, must be delayed for perhaps many years, at least until such times as confidence was restored amongst us. What we require is tact, energy, and trust in honourable men, throwing off without hesitation those with a procrastinating or number one tendency. The Dentists Act take it altogether is a really good bill, and should supply to a great extent our present wants, and it would seem does not require much amending,—at least, not just yet,—except perhaps the addition of a stringent clause relating to pupils and assistants, the whole thing is in a nutshell, as can be seen. Our powers simply want enforcing. Half-a-dozen or less well fought cases would finally break down the enemy all along the line. When business is really meant, individual dentists will not be found wanting; they will make any financial or other sacrifice to quickly and honourably participate in this much to be desired Dental Millenium.

Yours, &c. ACTION.

Hospital Reports.

Monthly Statement of operations performed at the Dental Hospital of London, Leicester Square, from Dec. 1st to Dec. 31st, 1888 :—

Number of patients attended		
Extractions	Children under 14	924
	Adults	803
	Under Nitrous Oxide	626
Gold Stoppings		277
Other Stoppings		904
Advice		127
Irregularities of the Teeth		132
Miscellaneous and Dressings		152
Total		3315

Geo. Seymour, L.D.S., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of December, 1888 :—

Number of Patients attended		835
Extractions	Children under 14	652
	Adults	
	Under Nitrous Oxide	88
Gold Stoppings		30
Other Stoppings		100
Miscellaneous		231
Total		1101

P. A. Linnell, *House Surgeon.*

Monthly Statement of operations performed at the National Dental Hospital, from Dec. 1st to Dec. 31st, 1888 :—

Number of patients attended		1584
Extractions	Children under 14	230
	Adults	364
	Under Nitrous Oxide	748
Gold Stoppings		59
Other Stoppings		480
Advic		426
Irregularities of the Teeth		96
Miscellaneous		146
Total		2549

E. C. Fisk, L.D.S., Eng., *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.

3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only ; and we also beg to call particular attention to the importance of a carefully-penned signature and address.

4. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.

5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under :

Twelve Months (post free) - - - 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291 Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 505. LONDON, FEB. 1, 1889. Vol. XXXII.

SOME SUGGESTIONS ON METAL CAP CROWNS.*

By W. Mitchell, D.D.S.

Mr. Chairman and Gentlemen,

Of late, the subject of my paper this evening has come in for a good deal of attention at the hands of the most advanced members of our profession.

Much has been said and more has probably been written respecting the various methods of crown work, and possibly as much or more ingenuity has been displayed in this direction than has fallen to the lot of any other portion of our practice.

I do not purpose in this paper to go into the evolution of crown work, as that is already too well known to the educated dentist, to need even a passing notice here.

Of the various—and I might almost say numerous—methods of crowning teeth or roots, none present to the dentist, or patient, a greater assurance of success than the metal cap crown, embodying as it does the three essential features requisite to that end, viz : adaptability to the greatest number of cases, cleanliness, and indestructibility—always bearing in mind that only bicuspids and molars are to be treated by this method.

This process of capping admits of the restoration of articulating surfaces afforded by no other ; for with suitable dies, or only just the addition of a certain amount of solder here or there, its capacity in this direction is limited only by that of the dentist.

While this subject has been pretty freely discussed both in and out of societies, but little of a practical nature has been touched upon, to enable those of a limited experience or capacity to more thoroughly understand the manipulation necessary for the successful completion of this kind of work. It is to that end that this paper is presented.

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* A paper read before the Odontological Society of Great Britain.

Taking for granted the tooth or root to be capped is in a healthy condition (*i.e.*, if a devitalised tooth), treatment has been completed and roots filled, I then proceed to prepare the tooth or root for the cap. This is done by various means, principally by corundum wheels of suitable shapes and sizes used on the engine, to reduce in height to allow for restoration of bite, or to admit of adjustment between adjacent teeth.

In bicuspids or molars where the root is on a line with the gum, I find it a good plan to put one, two, and sometimes three good platinum or dental alloy pins in the pulp canals, fitting them first, make them the proper length, and then drive them solidly home—they thus afford much support to the cap, especially where it has a good deal of work to perform. After having properly coned the tooth or root, I then go all round the cervical margin with an instrument removing every vestige of enamel remaining there. This is easily accomplished by inserting the point of the instrument first under the free margin of the gum, then with a draw-cut the enamel is trimmed off very rapidly and effectually.

It will be observed the convexity of the distal surface of the instrument prevents injury to the gum margin. The most careful and thorough preparation of the neck of the tooth is one of the most important factors in the success of the operation, for upon this the fit and ultimate retention of the cap almost entirely depends ; hence the absolute necessity for its most careful observance.

This done, the tooth is ready for the cap. For this I use coin gold rolled to No. 5 B.P.G. for the band, and No. 3 for the top. The reason I prefer coin gold is, it works more uniformly than anything else I have tried, and its colour is good in the mouth, besides being quite hard enough to withstand any service it may be subjected to.

In preparing the band I find no model necessary, except the tooth itself—all others being "a delusion and a snare." And here I wish to remark that any crown made to fit a model other than the tooth itself will not fit the tooth perfectly, notwithstanding all assertions to the contrary. Another reason the band should be fitted to the tooth itself is, it can then very readily be determined how to trim the band to adapt it to the requirements of the gum ; this cannot be done when a cap is made to fit a model. I next take a piece of visiting card and approximate it to the height and length for the plate required for the band, a piece of heavy lead foil is very good for a pattern also; then with a pair of medium-sized pliers, with one jaw flat and the other half round I proceed to adapt the plate to the tooth, making the band slightly flaring towards the grinding surface.

When I have fitted the band as well as possible, I close it a little by squeezing between the fingers, so it springs over the tooth when put on for trial; should it then not pass evenly under the gum, I trim the band until it follows the contour of the gum. I find a pair of manicure scissors with short but heavy blades the best for cutting the gold used in this work; then having left a line or so for lapping always having the lap come on the outside for convenience in marking and trimming, mark with the point along the lap, remove the band from the tooth, close it about a line, then solder; this is most easily accomplished over an ordinary bench bunsen, holding the work in a pair of solder pliers, or, what is much better, the device; the bifurcated end is for holding the band, the small ring for supporting bicuspid tops and crowns, the large ring for molars, flush the lap of band nicely. I prefer a lap joint to an edge to edge one, as it is easier to make, can be made just as neatly, and proves a great saving in both time and patience. Having soldered the band, try it on; if it is too tight, place it on the horn of an anvil, when a few light blows with a hammer along the lap will soon stretch it to the required size, and owing to the softness of the gold in a great many instances it will be found the band may be driven on nicely without any stretching.

Should the band on the inside of the lap need any attention after soldering, a half-round file judiciously applied will soon set that all right. I then chamfer the edge of the band that goes under the gum, and burnish it, as it then more readily insinuates itself been the tooth and the gum. After the band is started, I assist it to where I ultimately want it by driving it on with a steel mallet, using a piece of apple wood or bone about five inches long, checkered on the end to prevent slipping, as a medium to assist it to its place. I then judge as to the height the band is to be left, marking it, if necessary to be trimmed, remove and trim; then go round the band with the contour pliers, these produce the result. These pliers I designed after trying other methods for contouring, and not being satisfied with the results. After contouring, I take the band and hold its top edge against the flat side of a corundum wheel on the lathe, and by giving the band a slight rotary motion as it is held between the thumb and fingers, a flat surface is secured. It is then ready for the top.

The simplest method I have found for producing these is to take teeth that have been extracted, or models from impressions of natural teeth, investing the roots and crowns in plaster almost to the grinding surface, leaving the block about two inches high; this is trimmed leaving a base about an inch square—or in diameter if a round block is preferred. This leaves it in the best shape for drawing from the marble dust mould. The face of the block is made flat and left one-sixteenth of an inch wide; this is to act as guide in the finished die, to better assist the operator in utilizing his gold when stamping the top, and later on as a means of holding it while soldering. After securing the model as described, a sand—or, what is better, marble dust—mould is made, this is finished with file and graver, and polished on a lathe.

For the benefit of those who from some cerebral defect have allowed themselves to believe dental mechanics *infra dig*—and I am sorry to say there are many such in our profession—I would say, all this part of the process can be performed by any good assistant, quite as well as by the possessor (?) of the giant intellect, who fain would shun the essential detail whereby he is placed in a position to receive a fee, that others probably have done most towards placing within his reach.

Models for crowns can so easily be made by the process described, that any case may easily be contended with. I find by having a typical set of crowns, and a number of irregular shapes or by simply turning a die around, or only partly so, while swaging, almost any combination of articulating surface may be obtained. Another reason why this method is a good one is its simplicity and cheapness; any one capable of making a die can succeed in any case—something that cannot be said of many of the elaborate, costly, and not always time-saving appliances that are in the market.

No counter die is needed for producing the tops. Simply place the gold to be stamped on a piece of lead, a smooth surface can easily be obtained by a blow with a hammer. I find it best in striking up the top to put a piece of heavy tinfoil between the gold and lead; this prevents any small particle of lead adhering to the gold and producing sweating during the subsequent stages of soldering. After swaging the top the narrow flat margin can be utilised to hold it during soldering, as mentioned in a previous stage of the process ; flush the top with 20-carat solder, this can be done as with the band, over a bench bunsen burner. Having done this, touch the flat edge of the band with borax, place in the desired position on the flushed side of the top, return to the flame, when top and band will soon unite in the most satisfactory manner possible ; drop into pickle while hot, to remove borax, trim off surplus plate with shears, then *grind* off overhanging edges to the required *contour*, polish same as a gold plate minus stoning down, and the cap is ready for its final adaptation.

It will probably be remarked that no provision has been made for the exit of surplus cement. I think experience will teach that no special vent is needed, for no matter how perfectly one may appear to have the cap fitted, the surplus cement will find its way out if mixed to the proper consistence.

The best cements I have found to use in this work, are Richmond's Crown Cement, and Welch's Crown Cement, both kinds producing good results, owing to their smoothness, and a tendency not to set too quickly. The cement should be mixed so that it will just drop from the spatula ; a little experience will soon teach the amount requisite to fill the cap and leave the least possible surplus, which will find its way out round the neck of the tooth as the cap is driven home, this is best accomplished by the method suggested for setting the band ; the rest of the operation suggests itself.

I claim for this method that it is the most simple and easy plan of making metal cap crowns known, never necessitating a greater outlay of time than an hour and a half to prepare a tooth, make, and adjust the crown. I have made one and fitted it in thirty-five minutes, thus demonstrating that although descriptive detail involves some little time, the practical application of it in experienced hands reduces it to the minimum, and secures the most satisfactory results.

IMPLANTATION OF TEETH.

By George Cunningham, B.A., D.M.D., L.D.S.

(*Continued from page* 68.)

Teeth to be employed.—After deciding to adopt the operation of implantation, the first question one has to determine is whether it is better to employ dry teeth which have necessarily been out of the mouth some time, or those still invested with a live pericementum as in teeth recently extracted. The question of procuring the requisite teeth soon becomes a very serious and difficult one for the individual operator, and there can be no question that, from the point of view of supply, the feasibility of employing dry teeth may solve an otherwise insurmountable difficulty. The desire and hope of the operator is to procure a true physiological union, rather than a mere mechanical retention of the scion tooth in the artificial socket, and for a variety of reasons which we will shortly discuss at greater length, the employment of teeth, with a live pericementum, though presenting infinitely greater difficulties in the way of supply, would seem to offer better prospects of attaining that end.

While most of our American confrères, therefore, have followed Dr. Younger's later practice in implanting dry teeth, I have deemed it better to revert to his earlier, and I think better, practice, of employing only those with a live pericementum.

It must be admitted too, that the use of teeth with a live pericementum necessitates much greater care in the handling of the scion teeth during the process of preparation, and also exacts a considerable expenditure of time when it may be ill-afforded, since the dry specimens can be prepared at one's leisure. It is also easier to have a much larger choice of dry than of moist teeth, a point of considerable importance, since the space to be filled may be either abnormally wide or inconveniently narrow, but whereas the first appearance of the implanted dry tooth is extremely unsightly and unnatural, the use of the moist variety is attended with no disadvantage as to colour.

Of course in the unsurmountable absence of such a tooth, I would not hesitate to use one of the dry variety, since whatever may be our theory as to the process of retention, there is no doubt as to the fact that a large number of such teeth are doing good service after a sufficiently long period of trial.

Methods to be employed. — The instruments especially adapted to the operation are already somewhat numerous, including the Younger trephine, the circular knife of Rollins, and the crib knife of Ottofy. The pain dependent on the operation is no doubt greatly due to the nature of the instrument. From my own limited experience I think the easiest plan consists of boring a small hole representing the axis of the new socket, and then enlarging with rapidly cutting bone reamers with a guiding point to follow the first perforation. Instead of a sliding guide as in the Younger instruments to indicate the depth of the socket, I have had the drills themselves graduated which serves the same purposes and effects a saving of time. Messrs. Hallam & Son have succeeded in making these instruments from my rough designs, and from the experience of my last operation they promise well. These instruments should be employed in an engine without any spiral "wrist," and with a large and heavy driving wheel such as the old Bonwill engine. In order to facilitate the filling of the root canals, &c., of the scion tooth, and to preserve the pericementum from injury during that process of treatment, I have designed a simple holder which, by firmly grasping the crown and leaving the pericementum quite free, enables one to perform the necessary operations with the minimum amount of injury to this membrane.

Medium for the scion tooth.—As it is not always practical to at once transfer the scion tooth to its new socket, and as the tissues no doubt do retain their vitality for an, as yet, unascertained limit of time, it is advisable to have some medium in which to keep the tooth moist and if possible aseptic. One naturally turned to those so-called normal fluids employed in the physiological laboratory, since when fresh they are said to cause very slight change in the tissue as they more or less resemble the fluids with which the tissues in the body are surrounded. The normal fluids are :—

(*a*) The aqueous humour of the eye.
(*b*) Blood-serum.
(*c*) Normal saline solution (.75 Na Cl.).
(*d*) Iodized serum.

On consulting Mr. Langley, the well-known physiologist, he advised me rather against employing any of these, but rather to keep the teeth in plain water at a temperature just above freezing point as being most likely to prevent tissue and septic changes. It would therefore seem from this that the ingenious hot water bath, designed by Dr. Kirk for keeping the scion tooth in a sterilising solution at 103 degs. F., is rather a disadvantage than otherwise where teeth with a "live" pericementum is employed.

As it is certain that many failures in replantation and transplantation were due to the teeth being ruined by lethal doses of carbolic acid, and as the refrigerative method is not always practicable, no stronger solution than an at most two per cent. solution of carbolic acid or a 1 in 2,000 solution of mercuric chloride, should be employed for keeping teeth for implantation purposes.

Notes of Cases.

Case I.—On the 26th November, 1887, in the course of a demonstration of immediate root filling in connection with my lectures on operative dentistry, to the students of the National Dental College, a man and his wife presented themselves as patients. The woman had only the two right upper incisors remaining and was wearing an artificial denture. The lateral incisor had recently had an elaborate and excellent gold filling inserted on its disto-palatal aspect by one of the students, while the other incisor was offered to me as a fit case for the demonstration. I considered it my first duty to point out to the students the lack of judgment displayed in devoting any, and more especially any prolonged conservative treatment in such a case as that, since it was obvious that the patient might have a more artistic and a more efficient artificial denture in the absence of the two remaining incisors. Such a case is only typical of many others of only too frequent occurrence in which radical treatment by extraction is more conducive to the permanent well-being of the patient than the conservative treatment by simple occlusion of a carious cavity of a more prolonged process of pulp or root canal treatment and subsequent filling. It is also typical of a large and constant source of supply of live teeth suitable for implantation, and yet altogether devoid of the moral objection which has already been advanced, and that with perfect justice, against the practice of certain practitioners who have in the past been guilty of an injustice and a wrong of becoming a party to a conspiracy by which one poor unfortunate individual was induced for a pecuniary temptation to part with a useful and essential tooth for the purposes of transplantation into the mouth of the dentist's wealthy patient.

On examining the mouth of the husband of this patient, it was found that the crown of the right upper incisor was completely gone, and the root very considerably decayed and affected with a chronic alveolar abscess, evidently of long standing. After some little persuasion, both patients agreed to the following operations, by which the husband was enabled to remedy an unsightly defect in the front of the mouth by utilising the teeth lost by his wife, a loss which was in reality a distinct gain to her, both as regards function and appearance.

In order to effect this transference of the tooth, under the best possible conditions, and not merely for the purpose of giving the promised demonstration of immediate root filling, the putrid contents of the pulp chamber and root canal were immediately removed under rubber dam and mainly by the means of Morey's nerve drills. After syringing the canal with a one per cent. solution of mercuric chloride, the root canal was filled with oxychloride of zinc, and the crown cavity with phosphate cement. It was however allowed to remain in the mouth for three days in order to demonstrate, as it successfully did, the favourable result of such operative procedure, as well as to afford some little time for the cure of the chronic abscess at the root of the right upper central incisor of the husband, which was extracted on the evening of the 26th November.

On the morning of the 29th November, the central incisor was extracted from the mouth of the woman (aged about thirty-six) and kept until required in a weak solution of mercuric chloride (1 in 2000).

On examination of the mouth of the man (aged thirty-seven), the abscessed condition of the socket of the right upper incisor was found considerably improved, though the gums generally were still in a much inflamed and unhealthy condition from considerable deposits of salivary calculus and the generally dirty condition of the mouth. The root of the scion tooth was very much larger than the root which had been extracted. It was, therefore, necessary to considerably enlarge the socket, so much so as to entirely remove the case from being one of transplantation to one presenting all the conditions and characters of implantation into an artificial socket. On examination (after extraction) the scion tooth showed unmistakable traces of having been abscessed. The periosteum of the upper third of the root was inflamed and thickened, while the extreme apex was denuded of periosteum and much roughened, thus presenting unmistakable evidence of previous absorption. No abscess sac, so called, came away with the scion tooth on extraction. The lower fourth of the root was completely denuded of periosteum, mainly from recession of the gums and absorption of the alveolus. The scion tooth was out of the mouth just about half-an-hour and was securely fixed into the socket, in which it loosely fitted, by a metal splint covering the two adjoining teeth, and secured in position by phosphate cement.

Subsequent examinations proved that the wounded socket healed quickly and without the slightest trace of suppuration. The splint was removed at the end of five or six weeks, when the tooth was found to be fairly firm. That firmness gradually increased until its condition is now described by the house surgeon of the National Dental Hospital as follows :

"June 22nd, 1888 : Your first patient came up last week voluntarily to show me his tooth, of which he is very proud, and, well he may be, for it is *quite firm and painless* with no pericementitis present."

Case II.—On the afternoon of the same day (29th November, 1887), I inserted the right upper lateral incisor from the woman mentioned in the previous case in the mouth of H. E. W., a medical student at Cambridge University, aged twenty-six, for whom I had been obliged to remove the partially absorbed remains of the lateral incisor fractured high up in the socket some years previously. The condition of the operating field is described in my notes as follows : "Inflammation from the irritation produced by the fractured tooth subsiding, and the lower part of the alveolus completely gone." The operation for this implantation consisted of the enlargement of the socket in its whole extent for the reception of the larger rooted scion tooth. In this instance, also, the scion tooth showed signs of slight apical chronic inflammation of the periosteum which was absent on the lower fourth of the root, as already described for its fellow in the previous case. It was transported from London in a weak solution of carbolic acid, not more than two per cent., while the root canal was filled out of the mouth, during which process the periosteum was carefully protected by being held in a double folded napkin kept wet with mercuric chloride solution (1 in 1,000). Six hours intervened between the extraction and the implantation of that tooth. It was secured with a thin gold splint fixed with phosphate cement, which was removed at the end of a few weeks. No further treatment was necessary except an endeavour that was made quite recently to induce the gum to grow a little further down on the lower part of the root which was devoid of periosteum. The implanted tooth presented a most natural appearance when last seen (June 8th, 1888), and I would especially call attention to this case, as it is a type of that too frequent disfigurement, a yawning blank in the front of the mouth, remedied in a way, which every candid observer is bound to admit, is unequalled by any other known operation in dentistry. The only doubt as to the operation is as to its permanency, and experience alone can clear up that uncertainty. At present it promises well, despite the disadvantages of a scion tooth rather beyond the desirable age, and already beginning to undergo partial atrophy by the loss of the lower part of the periosteum and the consequent and undesirable exposure of a considerable part of the cementum, the least resistent of the dental tissues, when exposed to the vitiating fluids of the mouth. When this implantation does fail, apart from the possibility of repeating the operation by a further implantation, it will still be possible to apply any of the remedial measures generally adopted in such cases, which are probably only two in number, viz., (*a*) an artificial tooth with projecting wires built into cavities made in the presently non-carious contiguous teeth, an operation in any case which I should deem ill-advised from the uncertainty of its duration and the injury it must necessarily effect on the teeth of anchorage ; (*b*) an artificial plate, inconvenient to wear and probably more or less injurious to the neighbouring teeth and the subjacent mucous membrane. The only future disadvantage to which the patient has been exposed is a very slight extra absorption of the alveolus than would otherwise have occurred. It may be also well to remark that this patient, like others, is now in no way sensible of the sentimental, and to many the insurmountable objection of having in his mouth a tooth of another individual, and he glories in the comfort that this tooth had been entirely free from the considerable pain and bother he has had with his other teeth.

Case III. was that of A. B. C., a healthy young barrister, twenty-three years of age, who had lost his first upper bicuspid in October, 1884. The absorption of the alveolus was therefore quite complete and the gum normal and healthy. The scion tooth was a left upper second bicuspid from the mouth of a healthy young lady, aged thirty, extracted in order to prepare the mouth for an artificial denture on the same day (2nd December, 1887). The root canal was filled in the usual manner, while the distal cavity was filled with amalgam as a cavity in the crown with gold. The periosteum seemed fairly healthy, but only covered about two thirds of the root. During the three hours the scion tooth was out of the mouth it was kept moistened by a solution of mercuric chloride (1 in 1,000). It fitted loosely into the artificial socket, and was fixed with a gold splint secured by phosphate cement. On the following day I refixed the splint in a way which further conduced to the comfort of the patient. The gum was slightly congested, but no pain was felt except on pressure of the implanted tooth, which was loose but not "wobbly," as immediately after implantation. No further treatment was necessary. The splint was retained for about five weeks, when it was removed and the tooth found to be fairly firm.

As it is usually supposed that the operation of implantation must necessarily be a very painful one, the following notes on the operation from this point of view jotted down by this patient at the time in his own words may not be without interest.

"Stage 1. Lancing gum and detaching periosteum from bone. Pain not very great.

"Stage 2. Making the socket. Very little pain at first, but it materially increased as the operation progressed.

"Stage 3. Implantation, &c. No pain. On the whole I had far less pain than I expected, and what pain I had, though sometimes severe, was never acute. There was none of that thrilling pain incident to the boring of a tooth."

The patient is so far satisfied with this operation that he intends very shortly having the corresponding tooth on the other side, which has also been lost for several years, replaced by a similar operation.

To be continued.

British Journal of Dental Science.

LONDON, FEBRUARY 1st, 1889.

THE HEART IN RELATION WITH DENTAL OPERATIONS.

Perhaps few persons whose avocation brings them into contact with the manipulations of dentistry could fail to cite cases of fainting in the dental chair. These syncopal seizures are very familiar to all busy men, and yet but few references to them or attempts to explain their pathogenesis are to be found in our literature. Faintness, or even absolute syncope, occurs differently according to the individual. Sometimes an apparently trivial exciting cause is capable of bringing about these most untoward attacks, whilst at other times only the most severe and prolonged operations of dentistry will do so. Thus there are certain individuals who faint when their mouths are propped open, or when it is necessary they should voluntarily keep open-mouthed, others become faint when the rubber is applied. Throat specialists tell us that the impact of the laryngoscopic mirror against the posterior pharyngeal wall will in some instances cause a like inhibition of cardiac action. In more usual cases it is filling operations which determine syncope, even when no really painful handling has been employed. In destroying pulps, in treating sensitive dentine, in testing the sensibility of teeth, dentists are always upon the *qui vive* lest their patient should show signs of failing heart's action. It is within the experience of very many that prolonged dental operations act most injuriously on many people and quite out of proportion to the severity of the manipulation employed. The symptoms besides being those of much faintness or even syncope at the time of the sitting will in some persons be further prolonged and cause malaise and languor upon the day or days following. Extraction of teeth when performed without anæsthetics will frequently induce great faintness, but even here it cannot be said that such faintness is the direct result of the pain suffered, since it often occurs when the teeth are loose and the extraction almost painless. We all know, also, that since the introduction of cocaine into dental practice a certain percentage of persons react most powerfully against it, showing very alarming symptoms when it has been injected. Curiously enough the prick of the hypodermic syringe needle will produce this faintness before the cocaine has time to act, but will not of course give rise to the other untoward symptoms to which cocaine is so perilously liable. To explain these effects upon dental manipulation we have to consider the following facts. The fifth pair of nerves has been shown to be peculiar in many ways. The reflex excitability and persistent of functiation are certainly greater than some if not all the other cranial nerves. Again, the ganglia connected with the fifth pair are unusually numerous and important, while the same may be said of their relations with other nerves. Degrees of sensibility seem to vary *pari passu* with the fineness and numerical strength of the peripheral distribution and in this respect the fifth pair enjoys a pre-eminence. The curious arrangement of nervous strands in the pulp give to that structure almost a claim to be regarded as a nerve end organ, and this again enhances the importance and nervous acuteness of the dental nerves. It will be urged that if this view were true, the death of the end organ of the tooth (death of pulp) would lead to a sclerosis or atrophy of the branches, and it seems at least probable that such occurs, nor would it be a far-fetched theory to assume the variant function determined variance in morphologic character. Again, the teaching that the clinical pathology of fifth nerve diseases affords us goes far to demonstrate that hyperæsthesia coupled with dysæsthesia are of peculiar and excessively severe character when occurring in connexion with the fifth pair. It was pointed some two or three years back that during profound insensibility from chloroform the stimulation of peripheral branches of the fifth pair produced rapid return of consciousness, and it is a well-known fact, that for operations in which the fifth pair of nerves are divided profound anæsthesia is necessary, and unless such is obtained, there is a great and calamitous tendency to the production of syncope. The pharyngeal wall has a somewhat peculiar arrangement of nerves, the pharyngeal plexus, giving a very free nerve supply to the mucous membrane. Experiments undertaken, we believe, about 1883, by Prof. Brown-Séquard showed that if certain vapours of known strengths were made to impinge upon the posterior pharyngeal wall, care being taken that the vapour did not enter the lungs, the animal could be rendered unconscious, and the rhythm of the heart somewhat altered. A further point is that the nerves supplying joints appear to be very prone to produce severe centric effects when injured. Pain caused by injuries to joints is peculiarly liable to cause syncope and a considerable number of deaths from chloroform have occurred to patients in whom the attempt at reduction of dislocation had been made.

And further, it has to be remembered that the fifth pair, the pharyngeal plexus, the vagus, and sympathetic nerves, are all in more or less close anatomical relation, and that the last two are also controllers of the heart's action, supplying accelerator and inhibitory branches through the cardiac plexuses. These facts considered, we see that even where due allowance is made for those cases in which the cardiac faintness is the direct outcome of fear, there yet remain many cases in which we are bound to admit the peripheral impressions conveyed along the dental nerves, those supplying the gums and pharyngeal mucous membrane, and probably the stimulation caused to its nerves by fixation of the maxillary joint, act strongly upon the encephalon, and determine cardiac conditions directly the outcome of the close association of he nerves, to which we have referred. This brief resumé o a very important subject, may we trust induce the thoughtful to collect materials for study as well as provoke a more careful consideration of this class of case.

THE PRESIDENT OF THE ODONTOLOGICAL SOCIETY.—Mr. Henry Sewill delivers his inaugural address of February 4th. The addresses of so well known a writer and authority on dental pathology will be anticipated with no small interest.

CHANGES IN THE DENTAL JOURNALS.—*The Dental Record* of London, our respected contemporary, has under the editorship of Mr. E. Lloyd Williams, taken a fresh start in life. Enclosed in a new and less staid cover, it has made some fresh departures in the arrangements of its contents and bids fair to take a front rank among our journals. Our old friend, the *Independent Practitioner* has allowed its cloak to fall upon the *International Dental Journal.* We miss the old name, but welcome the new one, and are sure that under the able rule of Dr. Xavier Sudduth the *International Dental Journal* will prove a valuable addition to dental literature.

HÆMORRHAGE AFTER THE EXTRACTION OF A TOOTH.—Sir John Tomes writing on this subject says :—Matico rarely, if ever, fails to arrest the bleeding, if used with care in the following manner: Take the dry leaf and soften it in the steam of a kettle. Then roll it up, the underside outward, into a firm plug, the size of the socket from which the blood issues ; clear out the coagulum perfectly, and introduce the so-made, well-fitting, matico plug. Place over the same a pledget of lint of sufficient thickness to enable the opposing teeth to press the lint upon the exposed end of the plug, and direct the patient to keep the mouth shut for several hours.

DANGERS IN THE APPLICATION OF COCAINE.—Mr. M. J. Mattison, in the *Australian Medical Gazette*, of Sydney, says, cocaine is a rather dangerous remedy, and a certain numbe of accidents must be ascribed to its use. There are cases in which it is manifest that this remedy has caused serious results. W. H. Long had a patient whose larynx he painted with a solution of cocaine. The symptoms of the disease disappeared, but after three or four hours the patient became unconscious, with rapid pulse and profound anæsthesia, and finally respiration stopped, and with it, life. F. M. Thomas has reported the death of a lady, which was caused by applying cocaine to some diseased teeth. Myerhausen, Schroarzbach, Bockl, Reim, Litten, Newman, and others, have observed cases in which cocaine, without having fatal results, still was the cause of serious functional disturbances, According to an American author, the cocaine craze is progressing very rapidly, and those physicians who have had an opportunity to observe such cases, all agree that it will have very evil consequences.

Early Dentition.—The Spanish Journal, *La Correspondencia*, announced by royal decree that Rafael Alcalde y Barlitt has been appointed dentist to His Majesty, Alphonso XIII., aged three months. *Query* : Was his youthful highness born with teeth ?—*T. C. M.*, in *Cin. Lancet-Clinic.*

DENTAL EDUCATION.

Our Contemporary the *British Medical Journal* makes the following sensible remarks :—It may be said that one scheme of dental education proposes to amplify the present examination by including dental mechanics, and developing the practical part of it ; but does not in any way change the curriculum, and is distinctly against division. A second also seeks to improve the examination, but proposes to divide it ; requiring all students to pass the first and second professional examination for the M.R.C.S. and L.R.C.P. This would materially develop the curriculum, and would for the first part of their career place the dental and medical student on the same footing. The final examination, however, for the dentist would consist as at present, of dentistry and surgery only, but amplification to be made in the subjects of operative and mechanical dentistry.

To render this increased curriculum possible, it is proposed to reduce the three years' apprenticeship to a dentist (for the purpose of mastering the mechanical department) to two and a-half years, and to increase the hospital career to two and a-half years instead of two.

A third scheme proposes some enlargement of the curriculum, and the establishment of a new diploma or degree; M.D.S. (Master in Dental Surgery) to be taken by those who desire a higher diploma than the L.D.S. (Licentiate in Dental Surgery) after a more thorough and searching examination. The fourth, which however seems to have but few advocates, proposes to create a degree in dentistry, D.D.S. (Doctor in Dental Surgery).

In considering these proposals, it would be well that the dentists should definitely make up their minds as to the exact position they wish to take in relation to the medical profession. If, as most of us believe, it is desirable for them, and indeed for the medical profession as a whole, that they should be an integral part of it, then the second scheme is the one that will commend itself. From this point of view it is encouraging to see the dentists, who but ten years ago were unrecognised as a profession, without an Act or a Register, anxious to blend more closely with the rest of the profession.

It would be a decided advantage to both medical and dental students if, during their period of study at the general hospitals, there should absolutely be no difference in their curricula until after the examination has been passed in anatomy and physiology. From that point the medical student would devote himself to the subjects for his final examination, the dental to those required for the L.D.S.

The fault of the first scheme is, that until an adequate examination is required of the dental student in anatomy and physiology these subjects will be neglected, notwithstanding the fact that they are the groundwork upon which the subsequent superstructure has to be built up. Moreover, it does not bring the dental into any closer communion with the mass of the medical profession.

To the third scheme it may be objected that it separates the dentists into a distinct profession, and that it creates a new diploma, whereas one source of strength to the dental profession has been its one diploma, with which the public and the profession are becoming familiar; the establishment of a new one would produce confusion. The multitude of the medical qualifications is only a cause of weakness, and should not be followed by the dentists.

Finally, a development of the practical and mechanical examination for the L.D.S. would provide all that is required, if in addition it could be arranged that an "Honours List" could be published after each dental examination, or an honours examination held in addition to the ordinary one. All that can be gained, from a professional point of view, from this third scheme can be supplied by the second. If other or higher qualifications are required there are enough to be obtained by those who choose to work for them.

Abstracts of British & Foreign Journals.

ARCHIVES OF DENTISTRY.

FŒTOR, OR FOUL BREATH.

By L. Milliron, D.D.S., of Kimball, Dakota.

There are several causes for this disagreeable trouble. First, in some, it is caused by a calcareous deposit upon the teeth; in others, caries, or a combination of the two. In some, it is due to ulcers, abscesses, &c. in the oral cavity, while in others we find catarrh and diseases of the lungs to be the seat of trouble. In others, it is due to a diseased condition of the stomach and torpor of the liver; the latter alone may cause it. Then again, we may find a combination of nearly all of the above causes. The question at issue is: What shall we do? *Treatment.*—(1) *mechanical*, (2) *operative* and (3) *medicinal.* The first step is to remove the calculus; (mechanical treatment.) For the cure of the inflammation and ulceration which follows, sulphur, alone or in combination with prepared chalk is useful. Thus—

Sulphur,...	...
Creta Prep., pulv., ...	*aa* ℥i
Spts. Rectificatus, ...	℥iss
Aqua Dist., ...	℥iii
Peppermint, ...	qs

Mix. S.—Use with a tooth-brush morning and evening. Next remove all traces of decay, dead and putrid pulps and fill : (operatic treatment.) We will now consider some of the more important causes. Catarrh is conceded to be one of the main causes. This is usually brought on by negligence and a lack of cleanliness in early life, and is hard to eradicate, or even control, though it may be mitigated. Tincture of sanguinaria canadensis is useful ; it is equally good for diseases of the lungs taken in small doses, in conjunction with a hot vapour bath, daily. The above means are as simple and effective as can be given. The consideration of the stomach and liver must then come, here we almost always find the origin of fetor, although we frequently find one or more of the above named diseases in conjunction, and should be treated separately. In some cases an emetic may be necessary. Carbolic acid, five drops to an ounce of water, in teaspoonful doses, three times a day may be given with success ; this is best given after each meal. A better plan is to take the white of an egg, beat well, and add one cup of sweet milk and drink. This should be taken before each meal and continued for at least one month, or longer. Torpidity of the liver. This will cause indigestion, hence, fœtor. Leptandra virginica, in from one-half to one grain doses, morning and evening is valuable, it is best to give it in capsules. It will excite the liver and promote the secretion of bile, without producing the least irritation of the bowels. It does not purge at all, and even its laxative effect is very slight ; it acts upon the stomach as decided tonic, and under its action the stools soon assume a normal colour and consistency. It acts well in combination with quinine.

ARSENIOUS ACID.

By J. W. Wick, D.D.S., St. Louis, MO.

Arsenic is found in large quantities in New Hampshire and Connecticut, and elsewhere. The process of reducing the ore is a very simple one : it is placed in large muffles, from twelve to sixteen feet long and about six feet wide, in charges of twelve to fifteen hundred pounds each, a charcoal fire is then applied and the vapour that arises from the ore settles upon the walls of a succession of chambers, arranged in the tower, through which they pass and from which the uncondensible gases escape by the chimney. The muffles are inclining upward from their mouth and are left open for the passage of heated air to aid in subhining the arsenic and converting it all into arsenious acid. It requires from ten to twelve hours to work off each charge. The men employed in preparing arsenious acid die young ; their term of life does not exceed forty years. They are compelled to avoid alcoholic drinks and live principally upon vegetables and fat meat ; each man is also compelled to drink from two to four ounces of olive oil daily. The principle danger is in removing the acid from the chambers. The workmen are completely encased in a leather suit, with helmet with glass eyes ; the air passage is about one inch wide and is filled with a wet sponge, by which the air is filtered as it passes to the mouth and nostrils. Overdosage causes a slight stiffness and swelling of the face and eyes and some irritation of the digestive organs. Externally it is used as a caustic, forms the important ingredient in cancer cures. Its application is very painful, and, as a rule, has no advantage over the knife. Arsenic is frequently chosen for criminal poisoning on account of its being free from taste or smell : it interferes with circulation and produces intense burning pain in the stomach. When an over-dose has been taken, an emetic should be given, or the stomach pump may be used, until the proper antidote can be procured ; this is the hydrated sesqui-oxide of iron. It is made by adding water of ammonia to a solution of sulphate of iron ; the deposit thrown down is the hydrated oxide. In dentistry, arsenic is used for the destruction of aching or exposed pulps. It causes irritation, which increases the flow of blood to the parts ; the circulatory vessels are enlarged so that there is no return of blood through the veins ; the pulp then dies from strangulation. Dr. Spooner, of Montreal, it is stated was the first man to use it for this purpose. The writer has given up the capping process, and after filling with gold, it is like he thinks covering up a volcano when quiet, only to gather force for the coming explosion which will take place sooner or later. In the case of a tooth which will give trouble in the slightest degree after a filling has been inserted, he recommends "White's Nerve Paste" and instructs the patient to call the following day. The chamber is then opened and the pulp removed from each root, then injected with warm water, and when the bleeding has eased, he uses a dressing of pure carbolicacid, held in place by cotton, saturated with sandarac ; he dismisses the patient with instructions to call again in three days, when the cotton is removed and he again washes the canals out with warm water. He then applies carbolic acid and places a small quantity of iodol at the end of each root and fills in the usual way with gutta-percha.

Literary Notices and Selections.

THE SUPPRESSION AND SPECIALISATION OF TEETH.

By John Humphreys, L.D.S.I.,

Lecturer on Dental Anatomy and Physiology, Queen's College, Birmingham.

(*Continued from page* 86.)

5. *Bifurcation of Roots.*—The subdivision of a simple root into two parts is a most common occurrence, the first upper bicuspid in man being generally bifurcate, although the second bicuspid is single-fanged.

The lower canine occasionally subdivides, as does also the first lower premolar.

The first lower permanent molar, though described as two-rooted, is not unfrequently three-fanged from the subdivision of its anterior root, and the first upper molar evinces occasionally the same departure, and I think we may reasonably conjecture that the two-rooted second and third premolars in the Canidæ were formed from the subdivision of a simple-fanged tooth similar to the first premolar.

6. *Production of Accessory Roots.*—I was particularly impressed with this fact on examining the molars of Hydromys, as pointed out to me by my colleague, Professor Windle ; not only were the three normal roots existing, but also three additional tiny rootlets, each enclosed in its own distinct socket.

I think it probable that the palatal root of the carnassial præmolar in the Carnivora may have been developed in this way, for the production of an inner cusp by the raising of the cingulum would need a corresponding strengthening of the tooth to bear the increased strain upon the newly-produced cusp. Additional roots are often given off in this fashion in the hinder molars of ruminants.

The shape of the condyles and general articulation of the jaws exercise a very marked influence upon the form of the teeth, and the wear of their crowns.

In ruminants the glenoid cavity allows of a considerable amount of lateral movement, the condyles being rounded or concave in shape, which causes the teeth to be worn down by a side-to-side motion of the jaws.

In rodents the glenoid cavity is elongated from before backwards, and the condyle is small and rounded, allowing an antero-posterior movement.

But in the Carnivora the condyles are extended horizontally, and the articulation is so much closed in by a buttress of bone behind that it is almost impossible to disarticulate the jaws, as in the otter and badger, the consequence being that the play of the jaws is very limited, the closure being only upwards and downwards, without lateral movement.

Suppression of Teeth.—By considering the old Eocene Ungulates, as anoplotherium and homalodontotherium, where the teeth were arranged in an unbroken series, and comparing them with creatures now alive, we find suppression has taken place in one or other of the divisions, and, as a consequence, diastomata exist, separating one group from the other, carrying out the purpose that seems to characterise the majority of the higher Mammals, the shortening of the jaw, and the diminution and specialisation of the teeth, so marked a feature in the Carnivora.

In all cases the suppression appears to be most gradual, and firstly takes place in the reduction in size of the teeth, which become quite rudimentary, and finally totally disappear.

Suppression of Incisors.—In Ungulates we find several instances of suppression of the incisors ; thus in Babiroussa the incisor series in the upper jaw is reduced to four by the early loss of the third pair, while in the lower jaw all are present.

In the Nubian wart hog (*Phacochœrus Æliana*) a further reduction takes place by the suppression of the two outer pairs, leaving the central pair alone in the upper jaw, while in the lower the outer pair are wanting, and in the South African wart hog (*P. Pallasii*), the incisors are suppressed in both jaws.

In the hippopotamus they are reduced to two pairs in each jaw, the central being powerful tusk-like teeth, which are kept continually sharp by abrasion with the opposite teeth.

In the rhinoceros they vary very much, for while in the African two-horned rhinoceros they are totally suppressed, in other small-horned varieties, as the Sumatran, there are two teeth in either jaw, while an extinct variety from the Tertiary period, in the Himalayas, had the normal number, $\frac{3-3}{3-3}$.

Ordinary ruminants are destitute of incisor teeth in the upper jaw, as sheep and oxen, in which case the animal bites upon a dense pad of gum, but the group Camelidæ, as the camel and dromedary, possess the outer third pair in a stunted form ; and they are likewise present in the llama and guanaco, where they occupy the outer margin of the intermaxillary bone, and are caniniform in shape.

(*To be continued.*)

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Discussion upon Dr. Mitchell's Paper on Metal Cap Crowns.

The Chairman said they might now proceed to discuss Mr. Mitchell's paper, but before doing so he would read a letter received from Mr. Morton Smale bearing upon the subject.

89, Seymour Street, Hyde Park, W.

Dear Mr. President,

I had hoped to be present this evening, but am not permitted to go out in the night air for a day or two. I was anxious to say something on the question of Crowning in the discussion this evening ; when I found I could not go, I tried to find some models to illustrate what I wanted to say ; but I always destroy them, and keep instead (labelled) the special way in which they were taken, and have therefore only been able to find two, but they are typical of cases where I consider crowning the treatment indicated, and where in my opinion no other treatment would be so good. The bicuspid was in a lady, and consequently was faced with a porcelain tooth. The molar was a simple hollow gold crown. Both these cases were fixed with gutta-percha, and answer admirably ; in both cases the tooth was dead, and the nerve canals had been filled years ago, and in cases of this character, or of similar ones where it is possible to get the roots healthy and comfortable by treatment, crowning I consider a very valuable addition to our methods of procedure. The first crowning I ever did was some few years ago, when a public man, who had much speaking to do, came with his four lower incisors broken down. They had for years been very much eroded at the necks, and in three days all four had broken ; he was in great straits, but in no pain ; the next day he had to speak for more than an hour, and begged that I would do something ! What could I do ? A plate was as bad as no teeth for his articulation ! To devitalize and remove the pulps of four teeth, in a case where none of the pulps were exposed, did not commend itself to me ! I was at my wits' end : so to give myself time I took a model, and told him to come the next day at eleven, and when I got that model, the idea came to me to make teeth with a gold cap behind each one : the cap roughened inside, to make sure that Weston cement should keep them firm. I trimmed the teeth on the model to what I thought they ought to be, and filed them up in the mouth with files and wheels when fitting the artificial ones in. They have been there now for some years, and are firm still. I did not think it at all extraordinary at the time, or might have reported it. I imagine everybody in my place would have done what I did, or something better, and that probably many had already done so often enough, and years ago ; but since the literature and talk about crowning has arisen, the case has come to my memory again, and I quote it to support those who advocate crowning in well-chosen cases.

MORTON SMALE.

Mr. Walter H. Coffin said he would like to ask Dr. Mitchell if, when having driven the soldered band firmly on to the root, he had any particular or special method of taking hold of it for removal, as he (Mr. Coffin) had found some difficulty in removing softish gold over a root without injuring its form.

Mr. Henri Weiss said there was one point in the cases he had attended which had caused him some difficulty. In the method of adapting a collar to the outline of a root it was recognised as necessary that it should fit accurately. It was also known that by taking a very small piece of gold, bleeding of gums and pain was produced, and that the desired accuracy of fit was not obtained. His own method was to take a strip of gold at least two inches in length, hold the two extreme ends in an ordinary pin-vice. A lap of gold was thus obtained which could be placed over the root and there held firmly. The lateral portions could then be burnished with a burnisher, and the crown forced up the root with the thumb. Having done that he took a pair of fine pointed pliers and nipped out. Afterwards he removed the excess with the scissors, and soldered.

Dr. W. St. George Elliott reminded the members that some months previously he had the pleasure of bringing forward a plan for producing gold crowns, but his method was very different to that advocated by Dr. Mitchell. He might be pardened if he had a preference for his own plan. What Dr. Mitchell had said was, however, probably true. He (Dr. Mitchell) no doubt could fix on a crown in half-an-hour or an hour, but it would probably take an ordinary operator three hours, and for that reason Dr. Elliott found he could not give that time. He always prepared roots as quickly as possible ; took an impression at once ; cast in Spence metal—which gave him practically a perfect model of the mouth that the workman could work to closely. He then took the model and tried it in the mouth, placed the cap on the top, which had been swaged in a very different way from that described by Dr. Mitchell, then filled the cap with wax and made a subsequent appointment with the patient for finally fixing.

Mr. Willoughby Weiss said there was one point which he thought Dr. Mitchell might draw special attention to, and that was the use of coin gold. He (Mr. Weiss) had originally used pure gold, but found it too soft to stand the wear of constant mastication. There was one other small point ; he understood Dr. Mitchell that he filled in the crown with some base. That also he considered an important point, because at times the force of mastication was so great that it would wear away and dent in the crown. He had never adopted this plan ; if he had done so he thought he would have avoided the denting of the crown which had sometimes occurred. It was his practice to leave a hole in the centre of the crown through which the excess of holding material was able to exude, and after the cap was well secured in its place he then drilled out the opening and filled it in the same manner as an ordinary cavity.

Mr. Dennant asked whether Dr. Mitchell had used any considerable variety of plastic cements and had arrived at the conclusion that the two he recommended were the best as the result of his own experience. He also wished to know whether Dr. Mitchell had tried Flagg's plastic enamel. Mr. Dennant had not himself used Flagg's cement, but he had recently heard it spoken very favourably of.

Dr. Geo. Cunningham was of opinion with regard to cements that it would be well if they could have some better description than merely the name of the maker. They ought to know whether it was a phosphate or an oxychloride cement. That was an interesting point. He thought also that Dr. Mitchell might have told them something as to the strength of white cements, contrasting phosphate with oxychloride. There was one objection to the all-gold-crown method which had already been remarked upon, and that was its unslightliness on a first bicuspid. It might be a strong operation, but he (Dr. Cunningham) did not think it the highest form of operative work; it was quite possible to add to it the natural effects of a porcelain tooth. He himself believed that the profession would soon have within its reach greater facilities for fixing bands and avoiding by Mr. Weiss's plan bringing the solder in front. Dr. Cunningham could see that the pin-vice was a good suggestion, but he was informed that Dr. Bing, of Paris, did not solder the bands; by means of compressed air he melted the gold of the two ends together. This might be done with compressed air and ordinary gas, using the Knapp blow-pipe, or, better still, oxyhydrogen gas. Referring to porcelain fronts, Dr. Cunningham said that his plan was to make a ring ferrule which would surround the tooth, from that contouring, and letting in the porcelain front to the gold band. The gold band being very narrow in front was easily concealed by the gum or showed very slightly, at any rate it was better than the all gold crown. For his own part he could not adjust articulation by means of appliances which Dr. Mitchell had described. He preferred using a How's screw, and, if necessary, deflecting; then filling up with a full amount of amalgam on top, and of course that being high up it was possible to adjust absolutely. He thought this plan æsthetically was better than Dr. Mitchell's.

Mr. Walter Coffin remarked, with regard to Dr. Cunningham's porcelain fronts, a patient came to him wtih an entire gold crown exposed to view, and said "he would like a window made in front." Mr. Coffin succeeded in making the window. He first put in a little porcelain cement and then tried to fix in a porcelain front, but he regretted to say in the latter he was not successful, but he thought it could be done.

Mr. James Stocken some little back had had a case where he had the misfortune to break off a porcelain front—it was the first bicuspid. He countersunk the crown and accurately fitted a porcelain front to it, which answered perfectly.

Mr. Amos Kirby said he thought that the appearance of metallic crowns near to the front of the mouth was objectionable, and further that it was desirable that artificial crowns should be removable so as to give access to approximal cavities in neighbouring teeth should they become affected by decay. He used ordinary flat teeth as a facing, fixing to the bark a short piece of tube or casing of dental alloy, in the form of the required crown: this was split from top to bottom on the lingual side, and was attached to the root by an amalgam filling, and could be removed and replaced at pleasure. In preparing the crown a thin backing was first soldered on to the pins, and to this again was soldered the tubular casing, which being the dental alloy was not affected by the mercury contained in the amalgam which forms the body of the crown.

Mr. Betts said, with regard to filling roots, he himself had a tooth filled with Portland cement, and had found it answered admirably.

Mr. V. Cotterell said that at least nine years ago he made some experiments with Portland cement for stopping at the back of the mouth. He found that several came out very quickly, but that was due, he discovered, to the way in which the cement was mixed. It must not be stirred up as was done in the case of all oxychloride cements.

Mr. Boyd Wallis had used Portland cement for temporary fillings, and found it answer remarkably well.

Mr. Henri Weiss was under the impression that Dr. Mitchell's paper was upon the adaptation of gold crowns, but as the discussion had deviated somewhat from that line, he might mention that his experience with regard to porcelain fronts was that it never made a water-tight filling. After a time moisture would find its way in between the porcelain front and the gold collar.

Mr. Leonard Matheson pointed out that even after the collar had been fitted a cap was made, one might then fit the crown on to that and no water would get in. The porcelain crown should be fitted to the collar and to the cap.

Dr. Mitchell, replying to the various questions, said, with regard to irregular bands, sometimes it was found there was considerable difficulty in fitting irregular bands, but it could be done very nicely; the band could be fitted on in the mouth, and with a pair of fine-pointed pliers it could be adapted to any inequality of the gum. With regard to the method suggested by Dr. Elliott, there was no disadvantage in the method, it was only a little more expensive.

With regard to coin gold, he found it the best thing He started on pure gold because it was easy to work, but it was just as easy to wear out. With regard to Mr. Weiss's question, he simply flushed the top with No. 1 solder, it was not necessary to use any with the band at all then. The reason he used No. 3 for the top was because it took the contouring of the crown better. In reply to Mr. Dennant, with regard to cements, the reason he used Welch's and the Richmond was because they were much finer than other cements, they flowed more easily, and were in every respect better; they were oxyphosphates. With regard to Dr. Cunningham's questions, he was quite right with two exceptions. In regard to first bicuspids, granting it was not æsthetic, there was no objection at all to using a porcelain front. With reference to soldering bands, there was no reason why Dr. Bing's method was not a very good one. There was one other point mentioned by Mr. Weiss as to the possibility of moisture, by making any entire solid cap, any difficulty in that direction was disposed of.

The Chairman said there was one thing more to be done before the members dispersed, and that was to elect Auditors. Mr. James Stocken and Dr. St. George Elliot having been proposed and seconded, were duly elected Auditors for the ensuing year.

THE MANCHESTER ODONTOLOGICAL SOCIETY.

The annual dinner of the Manchester Odontological Society took place on the evening of Saturday 12th inst, at the Grand Hotel, Aytoun Street, Manchester, Mr. L. Dreschfeld, President in the chair. The following gentlemen were present as invited guests. Dr. A. H. Young, Dean of Owen's College; Dr. J. Dreschfeld, Professor of Pathology, Owen's College; Dr. Glascott, Ophthalmic Surgeon, Royal Eye Hospital, Manchester; Dr. A Wilson, Administrator of Anæsthetics, Royal Manchester Infirmary, and Victoria Dental Hospital; Dr. Prince Stellard, Administrator of Anæsthetics, Victoria Dental Hospital.

After dinner the President gave the toast of "The Queen and the Royal Family," and expressed the hope that the new year might bring happiness and prosperity to her Majesty, and all the members of her family (cheers).

Mr. W. Simms then gave "The Medical Profession." He said the toast was one that would be well received in every assembly of English gentlemen. They were not likely to forget the services of those who in their moments of weakness, and their days of ill-health, cheered them by their sympathy, and brought them back to health by their skill, (cheers). The reasons for receiving that toast did not rest merely on grounds of sympathy. During the last fifty years the medical profession had made great and wonderful progress, a great increase of knowledge has taken place, and for these solid reasons the toast might well be received by them with enthusiasm. It was in 1874, he thought, that in opening the medical session of the Owen's College, Professor Huxley spoke of the remarkable progress that had been made during the last fifty years, having in his mind principally the advance made in the science of physiology, a science which even now might be said to be young, and one which would no doubt in time give them greater knowledge and greater results. Progress, he thought, had been made since that time, so that it might be truly said that the knowledge which young men were now required to have, was a knowledge that fifty years ago could not possibly have been got. Some of the able lecturers of their college were with them that night, and they welcomed those guests to their feast with the greatest pleasure, (cheers). Not only might they be proud of the general advance medical science had made, but he thought they might bear in mind the advance which medical science had made in their own city, and the steps which medical men of twenty or thirty years ago took to put medical education on a wide and proper basis. The advance in medical science and knowledge did not depend altogether, or chiefly upon the medical schools being united with Owen's College, for he believed it was a fact that Medical Schools of great repute existed in Manchester before the happy union with Owen's College, in 1871. They might therefore remember the men who thirty or forty years ago laid the foundation on which such a noble superstructure had heen built, (cheers). Although great results had been achieved before the union with Owen's College they all admitted the great advance that had been made since the time when, in 1871, the men who had the advancement of the profession at heart, decided to join Owen's College. He thought they might take it that the returns recently published by the Registrar General showed that the steps which had been taken to better educate medical men—steps taken by themselves—had had a happy and successful result, for he found from those returns that while in the decennium 1841—50 the general death rate of the country was over 22, in the decennium ending in 1880 the death rate had declined to 21.4, and he believed a still further decline had taken place. He thought that in these remarkable and acceptable figures, they saw the result of much that was done. People talked about the results of sanitary science, and no doubt the attention paid to sanitary matters had done a great deal, but he attributed the decreased death rate quite as much to the better equipment of medical men to combat disease. (Cheers). The medical profession had solved for itself the problem which dentists were solving for themselves now, and the whole question of medical education was one very interesting to dentists, who seemed now to be going through that phase which medical men went through, and which they solved for themselves. He had great pleasure in proposing "The Medical Profession," and in coupling with the toast the name of Dr. Glascott. (Cheers).

Dr. Glascott, in responding, said he must express the great gratification he felt in being asked to respond to this toast, and the great pleasure he felt in being present at a meeting like that. He was perfectly aware that many of his colleagues in that room would have responded more fittingly to the toast than he could, but still as a specialist he had pleasure in addressing a meeting of specialists, because he considered that gentlemen of their profession were merely specialists in one branch of medicine (hear, hear). The tendency of the times was to run towards specialism, and as a specialist himself he did not complain about that. The difference between the dental profession and the medical profession was getting very small, and all honour was due to the members of the dental profession who were doing their utmost to bridge over even the slight difference which now existed. That hononr was all the greater from the fact that this movement in favour of higher education in their special branch arose from themselves and not through any pressure of the public outside (hear, hear). He hoped to see the time when dentists would take the full curriculum of medical teaching. He thought it would be very much better if every dentist were a fully educated medical man, and certainly it would be a great advantage to medical men to have at any rate some knowledge of dentistry. In the first place it would not be a disadvantage as far as overcrowding in their profession went if every dentist had to undergo the medical curriculum, and certainly it would be of advantage to medical men if they knew sufficient of dentistry to know what could be done in the early stages of disease of the teeth. (hear, hear).

Mr. Parsons Shaw next proposed "The Owen's College." He said he thought it would be useless for him to attempt to give them any adequate idea of what this great institution was in the few words he had to say to them. There used to be an impression—and that impression had not altogether died out—that education was only intended for the benefit of the chosen few, that it could only be acquired in the cloister and the cell, and that it was a thing of very little use to ordinary people. He was of quite the contrary opinion. An institution like Owen's College, planted not in an out-of-the-way place, far from the busy haunts of men, but in Manchester, in the midst of this industrial and commercial centre, seemed to him to be exactly in its proper position, and as ever since the College had been in existence the end and aim of the teaching there had been of a practical nature, it seemed to him that not only was it in its right place but that the spirit which animated the teaching there was exactly what it should be.

(Hear, hear). Owen's College, in giving so excellent an education to their young merchants as well as to their professional men was, in his opinion, going to give a status to Manchester which would be in the end a most enviable one. Manchester had been made a centre of technical education, and they intended, God helping, to make it a centre of dental education. (Hear, hear). They were certain of every encouragement from all connected with Owen's College. The authorities there were not only prepared to give them as good a dental education as could be got, but they were also prepared to make an effort at least to take the lead in the matter, and without the slightest hesitation he said there was no reason in the world why Owen's College should not take the lead, why the time should not come when a dentist educated there should not be at the very head of the profession, or why it should not be considered the best school in the world. (Cheers). His hope was that they in Manchester might lay the foundation of a dental education unsurpassed in the world. (Cheers.)

Dr. YOUNG, in acknowledging the toast, said it was now some 16 or 17 years since he first became connected with the profession to which he had now the honour to belong, and it was always a pleasure to him to remember that he entered that profession through the portal of dentistry. He would like for a moment to contrast the position of practitioners 20 years ago with the position of practitioners at the present day. Remembering the position in which dentists were placed then, and the ranks from which they were recruited, and drawing a parallel between their position and the ranks from which they were recruited in the present day, he could only say that dentistry to day occupied a platform which was he might say almost unique. At any rate it had a place of his own, and a place of high distinction as one of the departments of medicine. (Cheers). So far from the dental student in the present day having a restricted course, as compared with the medical student, his curriculum was longer, more irksome, and more complete than even that of the medical student. Dentistry was the only special department, in fact, which demanded a special knowledge on the part of its candidates. The ordinary medical student, on the completion of his studies, could at once set up as a specialist in any single branch of medicine, but that was by no means the case with dentistry. Either dentistry was a long way ahead of the times, or the other departments were shockingly deficient in the way in which they met the requirements of their specialists. There was one thing about dentistry in which it was really unique. It was the only department which invited people to pleasant dinners of that description (laughter), and he could only hope that the other special departments would copy the example which the dental department had so generously given to them for some little time now, (hear, hear), and that before long they would have a dinner for ophthalmologists and so on throughout the whole list of specialties (hear, hear). He thought he might almost take it for granted that the influence, prosperity and success of a great educational centre might fairly be estimated by the influence it had upon the community of which it formed the nucleus, or of which it formed the special educational centre. Measured by this standard he believed the department with which he himself was connected had had a success which was simply remarkable in the history of medical schools. He believed it stood distinguished to-day as one of the schools of medicine which had been most remarkable for its success--a success which had never been more marked nor more distinct than it was at the present time. (cheers). He thought that success was a safe indication that the people connected with the college had made a very earnest effort to meet the requirements of the times. (hear, hear). If they asked whether the dental school, established some four to five years ago, had fully met the requirements and expectations that were framed in connection with it when it was established, he was bound to admit that if they looked at the question with fair eyes and from a true point of view the statistics did not seem to promise quite so much as might have been expected at the first. But when statistics did not give them the information they required, he presumed they might pardonably go a little behind those statistics, and endeavour to find some reason why they had apparently fallen short of the expectations which might naturally have been formed. Although the dental school of Manchester, as estimated by its numbers, had not progressed hitherto in the same rapid way as the other departments of Owen's College, it was easily and satisfactorily explained when they considered the remarkable alteration in the conditions of dental education which had taken place in the last few years. He remembered very well that the portal then to dentistry was through the workroom, and that success in dentistry depended mainly upon mechanical skill. The conditions of entry into dentistry had so altered that they might put it down as a broad principle that the original source from which dentists had been derived had been entirely cut off, and they had been driven to a different class altogether. The men from whom the ranks of dentistry were to-day recruited had different opportunities, different aspirations, and different views to the men from amongst whom at one time dentistry derived its recruits. The number of young men entering the profession in former days was great, and the whole profession became overstocked. The entry now, not in Manchester alone, but the entry of students for dentistry generally in all schools and all over the kingdom was small to such an extent that he did not think he was wrong in saying that it was not filling up the blanks which were made in their ranks. While this explained the want of entries perhaps, it opened up a remarkable field of promise for the future. Sooner or later, when the dental profession had got into its proper position—which it must come into very quickly—of absolute equality with every other special department in medicine, not only would people begin to see in the curriculum for a dental surgeon a fair and proper opening which might sometimes lead on to the medical profession, but exactly the converse would hold good, for many students who entered the medical profession would just as readily and quickly seize upon dental surgery as a specialised department of surgery as they did now upon ophthalmology, or diseases of the skin, or diseases of the throat. It was in this way that the influence of educational Establishments like Owen's College, backed up as they always were backed up, by the Victoria University, and receiving the approval and the support of those who are intimately connected with its respective departments—it was in this way, he thought, that the education in various departments of medicine would be brought together under one focus, and many of the irksome conditions under which they as dentists now laboured they might hope would ultimately be removed (applause). He looked forward with the greatest possible pleasure to the day in which that little gulf which Dr. Glascott delicately alluded to would be absolutely and utterly swept away, and when every department of medicine would be brought under one broad canopy, and he thought his would be facilitated, and was being facilitated by dinners of that kind (applause), and he also thought, that if the hint he had ventured to drop at an early period of his remarks was taken up they would have still further reason to sweep away any other differences which might happen to exist amongst them. (laughter). Alluding to the Victoria Dental Hospital, Dr. Young remarked that he for one welcomed an institution which had its origin in educational necessities largely. He regarded that as a most promising feature in its history, and one which was sure to secure for it a lasting prosperity and a lasting success. The Pathological Society of Manchester—the first of the various medical societies, and a society of no little importance—had recently opened up its ranks to dental practitioners, and steps of that kind, he thought, would very soon bring them into that common fold in which he trusted they would all find satisfaction in numbering themselves. (applause).

Dr. J. **Dreschfeld** proposed "The Victoria Dental Hospital." He said that of the different medical institutions in Manchester the Dental Hospital might be said to be the youngest. The general hospital had a history and traditions of its own, dating back for centuries. The special hospitals had also got a history of thirty or forty years. The Dental Hospital was the last formed hospital, but in spite of its youth it certainly had made very rapid strides, and had done a great and good work in every possible direction (applause). From the report issued at the close of the year 1887 he found that more than 10,000 patients attended the hospital during that year, and he had heard that last year the number increased to over 13,000. If they remembered that the cases treated at the hospital were cases not only of tooth extraction but cases concerning the teeth and the oral cavity, he thought they must conclude that a hospital which provided the best possible skill for so large a number of poor could not but have done extremely useful work in such a large community as theirs. One was naturally struck with the large number of patients who had crowded to this hospital, and one asked one's self where the patients went to before this hospital was founded. Some had, no doubt, gone to the Infirmary—not to the dental surgeon but to the accident room, and in his student days the accident surgeon deputed the work to one of the juniors, and he would not like to say how many of the patients left the Infirmary without having their teeth properly extracted. (Laughter). He was glad to think that all this was changed, and that the poor of Manchester could have the best possible skill at their service. Besides attending to the poor of Manchester, the Dental Hospital had a higher and loftier aim, and he was quite sure it had fulfilled that aim up to now with the fullest possible satisfaction. It was an integral part of the Dental School of Manchester, and it must be evident that the practical part of any branch of medical science was of much more importance than any theoretical part. He therefore looked upon the hospital as forming a much more important part in the dental education of a student than merely attending lectures at a school, but the lectures and the clinical work at the hospital ought to go hand in hand, and he hoped that the closest possible union and the best possible harmony would exist between these two parts of their dental school. They ought to have the power to give degrees to the students who had learned dentistry at the school, and if they had that power not only would they educate their students but they would raise considerably the standard of the dental profession in and around Manchester, because the students of to-day would be the practitioners of to-morrow. If they educated their students to the fullest extent they would have the fullest support and sympathy of their medical brethren, and he was quite sure also of the population of Manchester. (Applause).

Mr. G. G. Campion, in acknowledging the toast, said there was one point in Dr. Dreschfeld's speech that he would like to emphazise, and that was that the tone of that speech was rather a tone of encouragement than a tone of congratulation. Dr. Dreschfeld referred again and again to the fact that the Hospital had only just been established, and therefore that almost the whole of their work lay not in the past but in the future. That was a point of considerable importance, because they all must feel that dental education in this country was at present entirely in its infancy, and it therefore rested with bodies such as the Dental Hospital to develope that education to the very highest possible point. That was one of the great functions of the Dental Hospital. It was true that they had very considerable obligations to the poor of this city, and in some respects he thought they had fulfilled those obligations so far as they had gone, but they had a still greater obligation not only to the poor of the city, but to the entire community. It was in their hands that the education of the future dentist was placed, and that was a very important part of the work of the staff of the Dental

Hospital. He believed that the staff of the hospital realised these obligations, and was doing its best to fulfil them. (Applause). There was one point with regard to dental education, where one might draw a contrast between it and medical education. With regard to the subjects which a medical practitioner had to learn specially there was this fact to be observed, that they were subjects capable of being taught to the medical students in large classes. They saw this particularly in the out-patient department, and in the wards of general medical schools where one teacher was able to teach efficiently a class of thirty or forty students. If, however, they turned to dental education they would find that that was not so. The work they had to do at the hospital was work of a very delicate and difficult kind, the manipulative work had to be performed in a very confined space, and it followed from this that it was impossible for one teacher to instruct at the same time more than three or four students. It followed from this that with an equal number of medical and dental students the latter would require a very much larger proportion of teachers than the former. That raised one of the great points of difficulty which they would have to contend with before very long at the Victoria Hospital, the difficulty, namely, of perfecting their organisation in such a way that the number of teachers should be increased to a proportionate extent with the increase of students, and this was really a very serious difficulty with regard to dental education. It was by no means an imaginary difficulty, and it was a difficulty which was being felt very keenly at the present time at the first dental school in the kingdom, where it was causing the staff a very considerable amount of anxiety, because there the increase in the number of students had been so great that it was found now that the staff was not an adequate teaching body—they had not, in fact, sufficient teachers to instruct the students properly. This was a point, however, which did not at present crop up with regard to the Dental Hospital of Manchester. The number of students there had been small, and he believed it was because the number had been small that what teaching the staff had been enabled to give them had been good. When in a few years the numbers had been considerably increased they would find very much more difficulty than they had at present in instructing those students properly, and the problem which they would have to face was as to how they were to perfect their organisation in such a way that the increase in the number of teachers should keep pace with the increase in the number of students.

Mr. A. Wilson then gave "The Society." He remarked that Manchester had long been a centre for medical education, and it was the first provincial town in England in which it was possible to obtain a complete medical education. It therefore seemed to him that it was the most natural thing in the world that Manchester, above all other towns, should take the first place in dental education, which was really a part, though he was sorry to say a much neglected part, of medical education.

The President, in reply, said that at the meetings of the Society many good papers had been read, and he thought they might be proud of what they had so far done.

Mr. H. Planck then proposed "Our Guests." Hospitality, he said, was one of the most pleasing as well as one of the most common attributes of human nature. A great part of their pleasure that evening was derived from the presence of their guests. (Hear, hear). They had with them several distinguished medical men, and he thought their presence was an evidence of the great good feeling which existed between medical and dental men. (Applause). It also showed that medical men sympathised with the objects and aims of their Society, and that they felt that the dentists formed an important branch of the medical profession. (Applause).

Dr. Prince Stallard replied. He said he need not extol the advantages of professional men meeting together. They had heard something that night of specialism. Of specialism he knew nothing, but of generalism he knew a little, and if there was one person in his profession who came into contact with the dentist more than another it was the generalist and not the specialist. The generalist was constantly asked by his patients with regard to various aches and ailments that occurred in the neighbourhood of the face, and it behoved him to give advice as to what should be done in the case. His connection with the dental profession had been a very close and pleasant connection for about three years, and he thought the members of the dental profession in Manchester would always be found to be in every sense of the word gentlemen (applause).

The only other toast was "The President," given by Mr. W. Headridge and suitably acknowledged by the President.

Dental News.

BRIGHTON DENTAL HOSPITAL.

The annual business meeting of the Brighton Dental Hospital was held at the Town Hall on Thursday evening, under the presidency of Dr. Councillor Ewart. The minutes of the last meeting were read and passed. Col. Tester and Mr. Todd apologised for their absence, and the hon. sec., Mr. Gwatkin, read the following report :—

The Committee of Management again congratulate the Governors and Subscribers to the Institution upon the continued increase in the number of patients admitted and operations performed, as shown by the statistics furnished by the Medical sub-Committee.

Quarter ending March, 1887—Patients, 303 ; fillings, 65 ; extractions, 234 ; miscellaneous, 77. June—Patients, 384 ; filling, 89 ; extractions, 302 ; miscellaneous, 123. September —Patients, 447 ; fillings, 97 ; extractions, 325 ; miscellaneous, 171. December — Patients, 436 ; fillings, 99 ; extractions, 344 ; miscellaneous. 153. Totals—Patients, 1,570 ; fillings, 350 ; extractions, 1,205 ; miscellaneous, 524. Quarter ending March, 1888—Patients, 433 ; fillings, 98 : extractions, 300 ; miscellaneous, 162. June—Patients, 530 ; fillings, 89 ; extractions, 453 ; miscellaneous, 175. September—Patients, 571 ; fillings, 80 ; extractions, 452 ; miscellaneouss, 183. December—Patients, 680 ; fillings, 69 ; extractions, 510 ; miscellaneous, 244. Totals—Patients, 2,214 ; fillings, 336 ; extractions, 1,715 ; miscellaneous, 764.

During 1887 the total number was made up of 574 males and 996 females, including 662 children ; and during 1888 of of 826 males and 1,388 females, including 813 children, the increase of patients for 1888 thus being 644.

During the year 1888 there were 204 extractions under anæsthetics. The number of operations for the year are as follows : 1887, 2097 ; while in 1888, 2815, showing an increase of 722 operations during the past year. The miscellaneous cases include regulating of dental deformities and cases of cleft plates mechanically treated, while amongst the surgical cases have been those of abcess of the antrum. The only change in the staff is the resignation of Dr. C. M. Cunningham (who has left the town). The vacancy has been kindly filled *pro tem.* by Mr. H. Stoner, L.D.S., the Medical Committee feeling greatly indebted to him for his valuable assistance.

The Committee of Management refer with satisfaction and pleasure to the financial position of the Hospital.

The Chairman drew the attention of the meeting to the very favourable report and balance sheet. In six months of 886 they treated 400 patients; in 1887, 1,570 patients; and in 1888, 2,214 patients were treated, so the hospital in two years and half had gone on by leaps and bounds. This was in a great measure due to the medical staff, who gave their time to carry on this charitable work. There was nothing more painful than the acute diseases of the teeth, and the hospital afforded relief to those who could not afford to pay dentist's fee, and that was true charity. The hospital started very modestly in an out of the way place, but they had to cut their coat according to the cloth. Their present premises had not been adequate for a dental hospital since the beginning, but this defect was now going to be rectified, and they had found buildings in Queen's Road which would give them every accommodation and be central, thus bringing the hospital into the notice of the public. The hospital could be conducted in a most economic manner, and the funds will surely be forthcoming for the increased rent. The Chairman was struck on reading the tabular form that the extractions did not decrease, although conservative dentistry was now practised on the rich, and an appeal to save more teeth than have been saved would meet with a steady response. He congratulated the committee, officers, and subscribers on the very remarkable success that had attended the hospital. The dental hospital was one of the means of mitigating the severities and necessities of the poor, and he hoped they would obtain greater results in their new building.

The officers were all re-elected for the ensuing year, while Mr. Fox was added to the vice-president. Dr. Ewart and Mr. Fox returned thanks.

LIVERPOOL DENTAL HOSPITAL.

The twenty-eighth annual meeting of the patrons, subscribers, and friends of this institution was held yesterday at the Town Hall, the Mayor (Mr. E. H. Cockson) presiding. Amongst those present were Sir James Poole, Captain Bradley, Mr. Dawson, Mr. Waite, Messrs. R. Edwards, W. J. Pidgeon, M. Alexander, J. Wannop, T. M'Cracken, D. Campbell, W. L. Jackson (honorary secretnry), T. F. Brakell (honorary treasurer), &c.

Mr. Jackson, the honorary secretary, read the annual report, in which it was stated that the total number of patients admitted since the formation of the hospital amounted to 220,816. During the past year the number of patients treated at the head hospital and northern branch had been 24,044, including 8986 children, and of operations 32,701. The reorganisation effected during the past year in the honorary dental staff had resulted in increasing the status and efficiency of the institution ; and for the purpose of enabling proper attention being given to cases which involved preservation of the teeth and to the students' practice, and to further improve its position, the committe had at the recommendation of the medical board, appointed two qualified gentlemen as house surgeons at the head hospital, to fill the vacancy caused by the resignation of the late stipendiary dental surgeon, Mr. C. T. Stewart. These alterations had resulted in the hospital being placed in a more satisfactory position, as a recognised institution for dental students' hospital practice, and the committee had to thank the Medical Board of the Royal Infirmary and the Faculty, Liverpool School of Medicine, for the manner in which they had met them with regard to this matter. The committee recorded their thanks for the gift from Messrs. H. C. and M. Quinby of a dental engine, and for a second donation of 50 guineas from the chairman (Mr. John Cobham), and for donations of 10 guineas from the ex-Mayor (Lt. T. W. Oakshott), and £5 each from the president (the Earl of Derby) and Messrs. E. W. Rayner and H. C. Quinby. The patients' voluntary contributions amounted this year to £101 13s. 1d.—a satisfactory increase on any previous year.

The financial statement, which was read by Mr. T. F. Bakell, the honorary treasurer, showed a debit balance of £27 14s. 6., against a credit balance last year of 53 8s. 1d. The annual subscriptions amounted to £146, the donations to

£85, the students' fees to £33, and the patients' contributions to over £100.

The Mayor, in moving the adoption of the report and statement of accounts, referred first to the loss which the institution had sustained in the death of the late Mr. John Cobham, who, he said, was a very warm supporter of the institution, and had done as much as most men towards its maintenance. Speaking of the work done at the hospital, he said that the number of patients had considerably increased, the total increase being something like 3000, showing that the work of the institution was being carried on in an energetic and satisfactory way, and that its advantages were being more appreciated every year by the patients. Of the 25,000 treated in 1886, 8985 were children.

Dr. Dawson, who seconded the motion, said that, having been connected with the institution for a quarter of a century, it was very gratifying to him to find that it had developed into one of the first dental institutions in the North of England, and was now recognised in a very handsome manner by the Royal Infirmary and the school of Medicine.

The report was unanimously adopted; and on the motion of Mr. T. M'Cracken, seconded by Captain Bradley, thanks were voted to the committee and officers for their services during the past year.

Sir James Poole, as a member of the committee, next moved a vote of thanks to the consulting physician and surgeon and to the dental staff.

Mr. Wannop seconded the resolution, which was carried.

Mr. Waite, in moving the appointment of the president, officers, committee, and staff, said that since the staff was augmented, twelve months ago, there had been a very certain but gradual and steady improvement.

The resolution was seconded by Mr. David Campbell and carried.

The Mayor having acknowledged a vote of thanks to himself for presiding, moved that the following resolution be passed and a copy forwarded to the family of the late Mr. Cobham:—"That this meeting of the patrons and subscribers of the Liverpool Dental Hospital records its deep regret at the decease of Mr. John Cobham, the chairman and a warm and generous friend of the institution, and begs to tender its sincere sympathy with his widow and family."

The resolution having been seconded by Sir James Poole, and carried unanimously, the proceedings terminated.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

At the January sittings of the Examiners, the following candidates passed the Frst part of the Dental Examination :

Edward C. Castier, London; Thomas C. Collidge, Stroud.

The following passed the Final Examination, and were admitted Licentiates in Dental Surgery :—

Edward George Carter, 181, Edgeware Road, London, W.; John Gordon Mackintosh, 76, Lowther Street, Whitehaven; Charles Ernest Tucker, 4, St. John's Wood Terrace, London.

APPOINTMENT.

Henry G. Read, M.R.C.S., L.R.C.P., L.S.A., L.D.S., Eng., has been appointed Assistant Dental Surgeon to St. Bartholomew's Hospital.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressedby his correspondents.]

PROFESSIONAL CHARGES.

To the Editor of the "British Journal of Dental Science."

Dear Sir,—As a subscriber of many years' standing to your valuable Journal, may I ask the favour of the insertion of this letter in your next issue. I shall be much obliged if one or two gentlemen who are familiar with "Regulating work," or "Orthodontia," as it is more modernly called, will kindly give their opinion on the following case, in a later issue, but your own in this present issue, if possible, would be very welcome to me. The case is this—About midsummer, a youth of 15 or 16 years of age, was brought to me by his mother, having a central incisor broken off, and the root affected with periostitis, and giving him trouble. I decided that with a lad of his age it would be best to extract the root and bring the teeth together, thus closing the gap and avoiding the life-long infliction of an artificial tooth upon him. Accordingly I extracted the root under gas, for which I charged 10/6. I then began the operation of bringing the other teeth together to close the space, which was very wide, as the teeth were unusually large. By means of elastic bands this was accomplished, but as the teeth were very large and firm it took me about four months to complete the operation, the remaining incisors and the canines all having to be moved more or less in the process. The result was very satisfactory, the disfigurement being entirely removed, and he is now wearing a platinized silver retention plate, which I have advised him to continue to use for a year. At Christmas I sent in the account, charging 10/6 for the gas operation, and £5 5s. for the Regulating Operation. I received from the father, who is in very good circumstances, a letter in which he says that the charge is "*out of all reason*," for "*putting a bit of india rubber on his son's tooth*," and he gives me the warning that if I *charge all my customers like this I shall soon lose all of them*." Now my view was, and is that my charge was very moderate indeed. The amount in question is of course small, and it matters little whether I get it or not, but you will readily understand how disagreeable such an occurrence is, especially as the family is known to a considerable number of my connection. Your own opinion and perhaps of one or two others might perhaps lead him (the father) to take a different view of the matter, and save me considerable annoyance and loss,

I remain, Yours faithfully,
L.D.S., Ed. and I.

[The charges made in this case are certainly very moderate, and we think that a very little knowledge of the fees charged for good dental work would convince the father of the patient that he had been rash in accusing our correspondent of overcharging. The best course to adopt, would be for our correspondent to submit the matter to Sir Edwin Saunders, Sir John Tomes, or other leaders in the dental world.]

DENTAL QUACKERY.

To the Editor of the "British Journal of Dental Science."

SIR,—"Action's" letter in your last issue will go home to the hearts of many a struggling honourable practitioner, who sits at home watching and waiting-and hoping fainting for the patient who was coming to him, but saw an adver, tisement telling of some wonderful magic way by which teeth could be fitted or an American prophet, whom the *Daily Telegraph* tells us, has "only to puncture a hole and insert a real natural tooth.

Now, sir, why is this sort of thing not nipped in the bud? The test case has been tried, the judges have said to the General Medical Council, we are not, according to our reading of the Act able to strike a dentist off the register, because the framers of the Act have anticipated all your wants, and have given you the power. Advertising you say is "disgraceful conduct," and we say also that it is disgraceful in a professional point of view, "You have," said the judge, "power to remove a transgressor." Then, why I say, is this not done. There need be no expense and little trouble, all the General Medical Council would have to do would be this,—send circular notice to the gentleman to this effect:—

MR. R. D. S., Sir,—

We the General Medical Council, having power by Act of Parliament, under Sec. 10 of the Dental Act to erase the names of any registered dentists, being found guilty of "disgraceful conduct," in a professional way, which disgraceful conduct means advertising in any local paper, or showing specimens of work, &c.

Take notice that if you still continue to advertise after this caution, your name will be struck off the Register, and you will be no longer allowed to practice.

This is all that is wanted. Then Newspaper proprietors' heads would bow low, down would come the boxes of teeth. St. Martin's law would be a law of shut up shops, and the profession would rejoice, honourable workers would come to the front, and the mountebank would hide his diminished head.

Yours, &c., B.

P.S.—One of the General Medical Council, when he reads this I can hear him pause and say :—That is all very well as it appears in your point of view. If we do this, what shall we have to do, nothing but litigation will follow, mandamus here, mandamus there and everywhere, where is the money to come from? But let me tell those gentlemen that there are those of us in hundreds who would starve for a month, and mortgage our chattel, to find the money, but of course we will not find money for the shilly shally of British Dental Association. The British Dental Association will say to this, all you have got you must thank us for. I say they have done little enough with the money they have expended, we could do without their Journal. We ought to have had a Society like the Licensed Victuallers' Society, all the money should have been spent in prosecutions, and what has taken seven years to do should have been accomplished in one year.

To the Editor of the British Journal of Dental Science.

Dear Sir,—Having read the Journal for over thirty years, I now wish to ascertain through its medium the opinion of the profession respecting a subject that has caused me much thought.

There is an old and trite saying, it is this, "Don't beat about the bush," and acting upon the sense of this, I will at once enter upon the subject, on which I ask any brother Practitioner to give me his opinion through our Journal.

A registered dentist after several years' practice, fancies by qualifying as L.D.S., he will keep up with the times, and thereby increase his practice; he does qualify, and conforms to all the rules of the College. But his practice does not increase,—rather the reverse,—old patients die, others leave the town, or in some way leave him; at last he says to himself, I must find the cause, and that he speedily does, and says I will advertise and see if I cannot compete with others around me.

Before doing so, *ought that Dentist to return to the College his Diploma*? and if he did that, and advertised, would his Registration also be forfeited? I wish for any opinion on this matter, and shall be only too glad to start a correspondence in the Journal.

After which I intend to say a few words respecting the way the Irish Diploma was granted, and, if required, produce letters respecting the same which passed between one of its members, and a then noted coach. Apologizing for the length of my enquiries, any opinion will be thankfully accepted, by Yours,

UPPER MOLAR.

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DENTAL ABSCESS.*

By W. H. Dolamore.

Mr. President and Gentlemen,—

My subject to-night is a well-worn topic, but its all too frequent occurrence in our daily work, renders any apology for so occupying your time almost needless; and the fact that we began this year's papers with one on "Inflammation," continued our list with another on "Pulp Diseases," gives a certain appropriateness to finishing up with Abscess. We have had a kind of mirror, an all too faithful one, alas! of our everyday experience; it begins as Inflammation, the diseased pulp dies or is killed, we experiment with root-dressings and we finish up with Abscess.

You will remember how Mr. Pritchard told us, that inflammation is the result of some irritation applied to the tissues causing certain vascular changes, which results in an exudation of fluid and a migration of blood-corpuscles from the capillaries and venules, into the surrounding parts; how, if the irritation be slight and transient, these elements may be removed by the lymphatics possibly by the vessels also and the parts resume their normal condition; how, if the irritation be continued but not of any severity, loops of capillaries grow into the collection of cells from those around, and how the cells being thus nourished, develope into a more specialised form, and organisation is said to take place; and how, lastly, if the irritation be both long and severe, the inflammation spreading at the periphery no new tissue forms; the collection of cells grows in size, and the central ones being thus cut off from the blood vessels hence, poorly nourished, are not only not able to developeope, but really degenerate into those of a lower type, into pus cells—round multinucleated slightly granular bodies, in other words, suppuration occurs. Now inflammation occurs everywhere except in certain dermal appendages as hair, nails and in dentine and enamel of teeth, and these phenomena are constant, though the changes may be hidden, and the result vary somewhat, on account of the anatomical peculiarity of the part.

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* A Paper read before the Students' Society, ondon, Dental Hospital.

Few, I suppose, if any, will deny that Dental Abscess is essentially the result of inflammation, for I fancy Magitôt's view, that dormant embryonic tissue is at the bottom of the mischief, can have but few supporters. I think, therefore, we shall be better able to understand such a complicated condition, if we begin with similar changes in simpler tissues.

Let us take an abscess in a soft say in the subcutaneous tissue. The degenerated leucocytes—pus cells—form a central collection, stretching out on all sides between the tissue elements, pressing upon them and consequently causing their absorption ; further away, we find the vessels thrombosed preparatory to their following the fate of the previous layer : outside these the vessels are dilated, but the blood current retarded and diapedesis is in entire progress ; and lastly beyond all, we have a zone of simply hyperæmic tissue. Hence, there is no such thing as an abscess sac. Should, however, the progressive inflammation cease, the tissues around will become matted together on account of the pressure to which they are subjected, and this with some newly developed fibrous tissue, will form a thick and tough wall ; but this is only a consequential formation, and in no wise of any functional importance in the development of the abscess. The absence of any special pyogenic structure is further shown by a sub-periosteal abscess due to injury which merely consists of an effusion of corpuscles and serum between the periosteum and the bone, which subsequently degenerates into pus. Here the bone is one of the walls of the abscess sac, and is, at any rate at first, an undeniably passive agent. Of course, later on, the superficial parts of it, being deprived of its vascular supply—by this separation of the periosteum—dies, and is then an irritant to the deeper and more vascular bone, setting up inflammation and its sequence suppuration in the contents of the Haversian system.

I have thus rapidly run over these points, because it is on the same principles and these alone that we must endeavour to interpret the changes we find to have taken place in dental abscess, and not go turning creation upside down to find some mysterious and peculiar process and condition, just because the abscess is of dental origin.

Now, perhaps the simplest form of circumscribed suppuration in connection with the teeth, and one in some senses similar to our subcutaneous abscess, is that which is sometimes met with over an erupting wisdom tooth. Here we must suppose the gum to be more than usually resistant, possibly injured, and its vitality lowered by an opposing tooth, consequently acute inflammation starts, which is rapidly followed by suppuration. I remember such a case .—A man came to the Hospital with all the symptoms of an ordinary alveolar abscess, he was unable to open his mouth sufficiently widely to make any accurate observations, but right behind in the lower jaw, I could distinguish pus welling up, which, in my ignorance, I concluded to be due to a buried stump. As, however, I was ill-provided with instruments, and there was evidently a tense collection of pus, I determined to evacuate this through an incision, hoping that the acute condition would so far subside as to allow a better investigation on the morrow. I need scarcely say, that the contact of the lance with the hard enamel of the tooth, showed pretty clearly the real condition. The patient was prescribed a smart purge, followed by a tonic, and when he returned the following day, the case was practically cured, and the tooth could be readily felt.

Here you will, I am sure, allow me to quote in extenso, from Mr. Bland Sutton's paper, a somewhat similar condition occurring in the "now celebrated African elephant Jumbo. It is well known that this animal possessed only two stunted remains of tusks, and that they projected through the skin of the cheek. Some years ago, in a fit of passion, the elephant broke the tusks short off within their alveoli ; the opening in the tissue closed, concealing the stumps from view. As time rolled on, it became obvious that an abscess had formed in the neighbourhood of the stumps, this increased in size, the elephant became thin and was evidently in great pain, refusing food. It was clear to all concerned that unless the abscess burst or was opened, the elephant must die. Mr. Bartlett determined to make an attempt to puncture the abscess. He made a lance and fitted a handle to it, then mounted the gallery in the elephant's house, and tempting it with dainties, made a thrust with the spear but unfortunately, only succeeded in cutting three parts through the animal's hide, and of course failed to open the abscess. All attempts to entice Jumbo again to the gallery were unavailing. Still, the animal grew gradually worse; something must be done. Mr. Bartlett now determined to meet the brute on level ground. He had an instrument constructed of iron, three feet in length, one end of which was curved something like a crook, the other end had a rope attached. With this instrument concealed in his sleeve, Mr. Bartlett and the keeper approached the elephant and, while stroking his cheek, adroitly slipped the curved end of the lance into the hole in the cheek made at the previous attack, then suddenly hanging on to the end of the instrument, opened the abscess and they were instantly in the midst of a perfect deluge of pus and blood. The elephant turned tail much to their relief; they were well aware that he would do one of two things; either retreat, or *kill* them. The elephant, sensible of the relief he had obtained, allowed the abscess cavity to be washed out, and when an abscess formed on the opposite cheek, allowed that to be *opened* without resistance. Through the apertures thus formed his tusks appeared; this explains why they pierced his cheeks instead of appearing from under the lips, as is usual.

It would be very difficult to find a more noble example of true bravery than this. Mr. Bartlett knew full well the danger he ran. Yet the sense of duty, and the wish to relieve the suffering animal, stimulated him to risk his life to give ease to, and save the life of Jumbo."

Here I should like to point out, that in treating such cases, but more especially in acute abscess, we must not ignore the constitutional state of the patients, nor neglect appropriate remedies. Without discussing such rare but possible sequelae as Septic Pneumonia from pus trickling down the trachea during sleep, several instances of which in animals are recorded by Bland Sutton, we must remember that inflammatory fever is as likely to be present as if the abscess occurred elsewhere. I suppose it is its occurring in a part that can be kept at rest without the patient lying in bed, which fortunately in the majority of cases lessens this condition, but it also deceives the attendant as to the real condition: yet few of us can ever have been through the fever without remembering how really ill one feels; there is a throbbing headache, a feeling of utter weakness, the skin is dark, greasy and covered with sweat, and as I can testify from personal experience, the deep sleep of prostration into which one falls, when the pus has found an exit, say by extraction of the tooth, testifies to the exhausted condition of the patient.

I have not been able to obtain a temperature chart of such a case, but show one of acute superficial abscess on the outer side of the ankle ; you will note the drop of two degrees after the patient was at rest in bed, the great diurnal variation, from 100 degs. to 103 degs., and the immediate fall to normal when the abscess was opened. In addition to a condition of general malaise, the evening rise was always accompanied by patches of urticaria in various parts of the body, these disappeared as the temperature fell, and were not again seen after the pus was evacuated.

So severe may the fever be, that the patient may actually become delirious, in fact we get a condition of septic intoxication. As in a man, to whom I shall subsequently revert, who told me, that he was so bad with an abscess, that his medical attendant thought he was drunk, showing clearly that he must have been in a very delirious condition.

I will not stay to multiply examples of those serious and extensive abscesses arising in connection with buried or misplaced wisdoms sufficient are to hand in our text-books, but will at once pass on to those in connection with the roots of teeth, usually called alveolar abscesses. These are broadly divided into "acute," and "chronic," and many persons ask for no more exact classification ; careful enquiry, however, brings to light many varieties, each having in its earliest stages something peculiar to itself, either as to its mode or origin, its seat of origin, in the course it runs or in the symptoms it gives rise to. Such divisions cannot be separated by any hard and fast lines, and all tend later, if allowed to run their course undisturbed, to merge the one into the other and to end in very much the same manner. Time will not, however, allow me to attempt any such division to-night ; I think indeed, we shall better understand the cases and complications we meet with, and obtain a clearer idea of their pathology and consequently of all curative treatment, by dividing them up into two classes according to their relationship to the Periodonteum.

The first to include those which commence and, in their early stages are confined between the tooth and its membrane, or in the substance of the latter ; the second, those beginning outside the Periodonteum. For brevity's sake, I shall refer to the first as Subperiodonteal, to the second as Extraperiodonteal.

Abscesses coming under the first class may occur at any part of the root of the tooth—we find them form over that point, where the unfortunate Dentist may have perforated the wall of the root but by far the greater number are situated at or about the apex. Arköry states :—that "Abscessus apicalis is always of septic origin, the septic matter originating in a diseased pulp or in decomposed food in pulpless teeth, provided the apical foramen is small enough to prevent the filth being suddenly forced through," and anatomical considerations seem to me to support this. We know that the pulp and the periodonteum are in origin one and the same tissue ; how the odontoblast layer of cells is continued through the apical foramen and is reflected upwards over the lips of this opening forming on the outside of the tooth, the innermost layer of the cells of the periodonteum. Obviously, if there be a large foramen and matter be forced suddenly through, it will follow the course of the vessels and nerves, pushing aside the cells, and find itself in the loose tissue close to the bone. On the other hand, if septic matter be present in the pulp chamber and gradually infiltrate the intercellular spaces, it is theoretically conceivable that it might also follow this course, but if the pulp although diseased be yet alive near the apex, it seems to me far more probable that it would creep along between the odontoblasts and the dentine, these being but loosely connected, when the formation of dentine is not in progress; but by whatever means or course the septic matter gets into or beneath the root membrane, once allow that it is there and the subsequent formation of the abscess is just such as we have already considered in other places.

Why should this be so frequently the situation of abscess? I would answer this by asking ;—Why, if it be due to septic matter derived from the pulp, should it leave this tissue unaffected and travel through it to that beyond? The answer is obvious; it would not do so provided the tissue here was capable of being so affected. This proviso is held to explain why one patient having a thick and vascular membrane will be liable to abscess and another having teeth with but thin membranes will from similar causes and under like con_ ditions have diffuse periodontitis. Undoubtedly the most frequent cause of a predisposition to abscess, is consequent on such thickening due to rheumatism, which disease is now regarded more as a constitutional state with a tendency to fibrosis than as simply a joint affection. For a very clear resumé of these views I would refer you to the excellent paper by Dr. Cheadle published a few weeks back in the *British Medical Journal.* Hence one would expect abscess to be far more common in damp places than in dry, and, I must say, I was especially struck with their prevalence in Carlisle, a most "rheumaticky" district; they seemed to form on the least provocation. In answer to a letter, Mr. Warwick Hele kindly wrote :—"There can be no reasonable doubt but that the dampness of this climate (viz. : Carlisle), develops rheumatism and otherwise latent rheumatic affections. That is to say, that even where there is no other history of constitutional rheumatism, in the prevalence of alveolar periosteal inflammation, excited by climatic conditions, you have evidence of the rheumatic diathesis existing." He goes on to say ; "*a propos* of being unable to give data ; you see my experience here extends over 22 years, and I have personally no corresponding experience of a drier climate to compare it with." Other constitutional affections may in cases be quite as potent as rheumatism, but I have specially dwelt on this point, because those of us who may be called upon to practice in a damp climate, would do well to recognise this tendency and not pursue a risky treatment in the hope that luck will come to our aid.

Abscessus apicalis is an acute affection; it is obvious that the more chronic the case, the more widely will the root-membrane be affected, and *per contra* the less likely would there be a circumscribed abscess, localized to the apex.

But this division into acute and chronic is not capable of any exact definition ; an acute abscess not treated will often result in what is called a chronic one ; that is, the cavity is not obliterated, it is lined by large florid granulations which continually weep, whilst from their surface cells drop, as it were, into the cavity, a continuous discharge is thus kept up and the fistula does not close. Such a condition would be more correctly spoken of, as a Residual abscess. Moreover, the source of irritation, perhaps a foul stump, still remains ; setting up from time to time fresh acute inflammation. Chronic irritation, as we have seen, may lead to a hyperplasia of tissue, hence we may get a thickened membrane and in some cases a distinct fibrous or cellular tumour, which are embraced in the one class "Granulomata"; but should from any cause the irritation increase, or the resistance of the tissues be lowered, from constitutional or local causes, a process of ulceration, (or what would be so called if it were a surface lesion) sets in, with consequently a formation of pus. This I am able to show you, in a section and drawing kindly lent me by Mr. E. Lloyd Williams. Should this pus not readily find an exit, a more acute condition would be started, differing only in a variable degree from what we have regarded as an acute condition.

Of course, I know that some one will rise and say :—that they do not believe, that the class "Subperiodonteal" can be substantiated ; because, when you extract such a tooth, bringing away with it the separated periosteum, you may yet find pus coming out of the socket or at any rate you have seen it welling up by the side of the tooth previous to the extraction, which it could not do were it bound down to the tooth by the membrane. Moreover, that on incising this tumour you find its solid and not a sac.

To answer the last objection first :—I believe these solid growths to be the granulomata referred to and to have their origin in chronic and not acute inflammation ; for although I have not paid any attention to the point practically and indeed I do not think one often extracts an acute abscessus apicalis early enough to find the sac complete and with no complications, yet it is scarcely probable that Wedl and other accurate observers would have described a cavity, if there were no cavity. I therefore take it, till we have a distinct record of a number of cases proving the contrary, that there is a sac. If so, you must in order to prove your argument, show that no opening exists in it through which pus may have escaped ; secondly, you must remember that the mere pressure of the distended periodonteum will itself set up inflammation in the tissues around leading to the absorption of the bone and that the pus may have arisen from this cause : but, as I pointed out a while ago one class of abscess merges into the other, and it is quite possible that in an early stage all the pus was within the so-called sac, but that as the inflammation has spread, the tissues around have been involved and possibly there is a communication established between the two. For most undoubtedly teeth are extracted, having such a tumour on their roots, in the sockets of which no pus is found and round the necks of which no pus has welled up.

In dealing with extra-periodonteal abscess, we might consider it as a second stage of the former class, when the surrounding tissues were inflamed and the sac no longer complete, but as already stated it is often a primary affection, and I have also mentioned a number of causes. I should imagine that among the most frequent is the escape of some matter through the apex, decomposed food, debris during dental operation,s &c., setting up most acute and severe inflammation. I remember a case, which I believe was due to my using too large a brooch up the root. Here in the course of about twelve hours the face was enormously swollen, and unfortunately, though I extracted the tooth then, it took almost as many days for the swelling to disappear entirely. Quite a number of curious cases might be collected of foreign bodies through the apex. Mr. Ranger, some years ago showed a tooth at the Odontological Society, which he had extracted, having a brass pin projecting half an inch through the apex, it being impacted in the pulp cavity by means of a piece of wood and a slate pencil, no history could be obtained, for as you will not be surprised to hear that the patient was a rather stupid boy.

The effect of an abscess on the jawbone is two-fold, first there is an absorption of its tissue to make room for, or rather, as a consequence of the enlarging collection of pus; not that this is likely to have any solvent action, but that its pressure causes the cells in contact with the bone to take on osteo-clastic functions, of this you see a marked case in this unique specimen, of a Polar bear having an Alveolar abscess over each canine, which, with these others, has been kindly lent me by Mr. Storer Bennett. From a like cause, the roots of the teeth are also absorbed in varying degree as you see in these canines of a spotted hyæna. But the power of absorption that these cells possess is perhaps better shown in this molar of an elephant from the Odontological Museum, in which consequent on an abscess of the pulp, due to this bullet, the dental cementum and even the hard enamel are all absorbed away to a considerable extent. In one of Mr. Lloyd Williams' slides you can see these cells *in situ* filling up the excavations they have produced in the tooth. This absorption of the bone continues till there is an opening, through which the pus escapes into the loose tissue of the gum and cheek;

an event signalised clinically by rapid swelling and, owing to the tension being relieved, diminution of pain. As I have before mentioned, the absorption may be due to the necrosis, following separation of the periosteum, and consequent inflammation in the Haversian systems of the underlying bone. This in the man I have referred to as an example of delirium, was so extensive, that the lower jaw was divided in two, a most unfortunate condition, for it means loss of substance, delayed union, and in this case even after, paring the ends of the bone, there was only fibrous union.

The second effect of the irritation of the abscess is a deposition of spongy bone in an irregular manner on the outer surface of the jaw, which you also see in these skulls, but this is not so constant as the absorption and would only be met with in chronic cases.

Soon after the pus has infiltrated the loose tissue of cheek and gum a papule forms, usually on the latter, but sometimes even on the skin of cheek, which bursting forms a fistula, this is usually over the buccal roots, fortunately the most desirable situation. But it may be elsewhere, the floor of the nose being, in the case of the upper front teeth, by no means a rare event. Mr. Hele tells an amusing anecdote of such a case.

A dental practitioner, a thoroughly good man, made a pivot tooth for a central stump, pointing the pin, to get well to the end of root, and fastening it in with floss silk and mastick. In a short time, much to his annoyance, the patient returned with it worked loose, he however refixed it. But when the man returned with the same condition a second and a third time, his temper did certainly not improve, so, after winding a large quantity of silk around the pin and using some force to drive it home, he said : "There, if you work that out, you had better get someone else to fix it." The poor patient left, feeling guilty and persuaded it was all his own fault and the pivot remained firm. But when in the course of time pain and swelling began he did not like again to face his dentist, so simply grinned and bore it, until, one morning, his nose being exceedingly irritable and there seeming some discharge, be began to blow it in a very vigorous manner and on removing his handkerchief was much astonished, not to say alarmed, to find what seemed a piece of thread hanging out of his nose attached somewhere in its interior and when on pulling it, it began to lengthen out in the same marvellous manner, as the endless tape, which the conjurer draws out of his mouth. He began to wonder whether during the night he had been transformed into an automatic prize puzzle. You will see the answer to the riddle. The pin went through the apex and the silk was being unwound.

In the case of upper teeth, the pus often finds its way into the palate, if this form a collection beneath the periosteum, there will be a tense circumscribed fluctuating swelling, which being in some slowly developing cases, almost or quite painless may be confounded with cysts; the comparative rapidity of its development is however diagnostic.

I have the notes of a P.M. on a somewhat interesting case, who died from a sudden œdema of the glottis, in all probability consequent upon an abscess under a second lower molar. This also caused a subperiosteal abscess on the inner side of the lower jaw, the bone being exposed for about ¾ of an inch by a half an inch. The tonsils were swollen and ulcerated, and there was œdema of half the soft palate, this extended through the upper opening of the larynx to the true and false vocal cords. The submaxillary glands were infiltrated and swollen, and the inferior dental nerve was injected, swollen, discoloured and stinking; this last is interesting as showing the cause of some of the more intense pain.

Gentlemen, although I have touched on a good many points, I can scarcely claim to have settled any, nor do I think it is possible for one man to do so except by a research extending over years. Simply to cut a few sections, and record a few cases can be but of little good. It seems to me that what is wanted is a collection and record of cases, and as it is important that this should be complete, I have written out a kind of formula for notes.

1. Name. Age. Address.
2. History of any previous abscess over tooth.
3. History of present abscess—as to origin, duration, course, etc.
4. Present condition.
    (*a*) Local, (the swelling, escape of pus, etc.)
    (*b*) Constitutional.
5. The condition of tooth.
6. The periodonteum.
    (*a*) The extent to which it is involved.

(*b*) The presence of a tumour, whether this be solid or hollow, if hollow, its contents, if the sac be entire.

7. Microscopical observation,

I hope I may persuade many to take these notes, and if they will be good enough to let me have them, I have no doubt that some arrangement can be made, for bringing them before our society either by means of a paper or a pamphlet. You will notice that many of them only require observation at the time of the patient's visit. As regards the microscopical work, there will be a difficulty, but if the specimens are put in spirit they can be kept till a more convenient season; for I hope some day our School will wake up to fact, that the utter absence of any practical instruction in scientific research or, indeed, of any means whatsoever for carrying it on, is,—well not exactly creditable, to what I have heard called, the first Dental School in the world.

IMPLANTATION OF TEETH.

By George Cunningham, B.A., D.M.D., L.D.S.

(*Continued from page* 106.)

Case IV.—was that of W. H. W., a healthy but rather nervous undergraduate, aged twenty-one, who had lost his left upper first bicuspid several years previously. The gum and alveolus was therefore, in the same fully absorbed and healthy condition as in the previous case. The scion tooth was extracted with three others, on the 4th February, 1888, from the mouth of a healthy young lad, aged fifteen, for the purpose of correcting an irregularity, accompanied by interstitial caries. The root canal and crown cavity were treated as in the previous cases. From a naked-eye-appearance, which for such a purpose may possibly be absolutely unreliable, a large part of the root seemed to be entirely stripped of periosteum. The scion tooth was out of the mouth about six hours, and was kept moist by a 1 in 2,000 solution of mercuric chloride. Owing to a slight curve in the scion tooth it was found to fit so tightly into the artificial socket on one of the trials, that it was thought a pity to remove it again. The case was accorddingly dismissed without having it attached by any splint or even ligature. On inspecting the case nine days afterwards the scion tooth was found to be much looser than on implantation. The patient said that it was also slightly tender on pressure while eating, but did not otherwise give him trouble. On the 2nd March, just a month after the operation, the case was again inspected, and the tooth found to be much firmer again. When last seen (28th May, 1888), it seemed very firm, and in quite a healthy condition.*

Case V.—was that of J. H. G., a barrister, aged thirty-nine, who had lost his left upper first bicuspid more than ten years previously. The scion tooth was extracted on 4th February, 1888, from the mouth of the lad mentioned in the previous case. The root canal and crown cavity were treated as in the previous cases. To the naked eye the periosteum seemed fairly complete on the distal, and only partially so on the labial surfaces, while only slight patches were observable on the palatal and mesial aspects of the root. The scion tooth was out of the mouth over twenty-four hours, and was kept moist by a 1 in 2,000 solution of mercuric chloride.

Before undertaking to practice the operation of implantation on the living subject, I had taken the advisable precaution of practising the operation several times on the cadaver, during which I became painfully conscious of the danger of perforating the antrum. In the present case on syringing out the debris in the artificial socket, the non-appearance of the contents of the syringe excited suspicion, and on passing a probe there was no further doubt as to the existence of a perforation into the antrum. The socket was, however, practically complete, so the scion tooth was duly inserted, and held in position by a gold splint fixed with phosphate cement.

This case was under our direct personal observation for the next twenty-four hours, and I am glad to be able to state that beyond a slight sensation of fulness on that side of the face, no immediate disagreeable result followed the perforation into the antrum. In a few days the splint came away, and it was deemed better by Mr. Baldwin, who kindly took charge of the case, to retain the tooth by filling up the relatively considerable spaces between the implanted and the contiguous teeth by means of gutta-percha.

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* Oct. 10th, 1888.—Re-examined this case; tooth perfectly firm, gum quite healthy, with good attachment all round the neck of the tooth, which is only distinguishable from the other teeth by its being slightly smaller, and by its having the crown considerably disked down to articulate with the lower teeth.

Mr. Baldwin, who with Mr. Charles Tomes inspected this case about the 20th June, 1888, writes as follows :—

37, Cavendish Square, W.
June 25*th*, 1888.

My Dear Cunningham,—The tooth you inplanted was very firmly fixed in its place, more rigidly in fact than the other sound teeth which had not been interfered with. The gum around it was normal in colour and hardness, and tightly applied to the neck of the tooth. The connection had all the appearances of being a vital one. The patient told me he had been using the tooth perfectly, freely and fearlessly for some little time. I had hoped the alveolar process would be rebuilt to some extent around the root, but of this there was no sign. The depression of the gum, caused by previous absorption, remained on each side of the root as at the time of the operation.

The explanation of the exceeding tightness of the tooth is, I think, that the root was actually gripped by the gradually contracting fibres of cicatricial tissue, which must, in the nature of the case, form the bond of union in these cases. I regret to say, that herein lies, to my mind, an indication of future failure. The cicatricial tissue will go on contracting, during which time the tooth will be very firmly held. The contraction will diminish the size and number of the blood vessels, and greatly reduce the vitality of the tissue. This tissue will then be very liable to absorption, as we know the *normal* connection of teeth is now-a-days, as shown by the frequency of permature loss of sound teeth. I cannot imagine a connection of this nature lasting efficient more than, say, about two years. Perhaps this is a pessimistic view of the situation.

Now about the complications you refer to. All the three molars are alive. On the gum high up between the roots of the first and second molars, is a flat sessile growth about one-third of an inch long. This growth contains the orifice of a sinus which discharges a very little pus. That is to say, a little pus can be detected in the orifice on first examining, but when that has been removed it is not possible to squeeze out any more. After a little difficulty, I got a very fine blunt probe to follow along a fistulous track in a direction horizontally inwards and backwards but chiefly backwards. This track ran in the substance of the bone, but was lined with smooth easily bleeding membrane. I could not feel any bare bone. I do not think the sinus had any present connection with the implanted tooth, nor do I think it had any connection with either of the three molars. The explanation of it is difficult, but on the whole, I am inclined to think it is a fistula leading from the antrum. Whether its primary cause was the operation for implantation, it is impossible to say. I think the whole public and profession are indebted to you for giving implantation a fair trial. I do not think it necessarily a barbarous operation, if it proves a success, but, for my own part, I doubt the duration of the success being of sufficient length to make it worth while.

I am, yours sincerely,

H. Baldwin.

Case VI.—Was that of G. S. G., a healthy undergraduate of twenty-one, who had lost his first upper left bicuspid, which had been extracted several years previously. The conditions were quite normal as in several of the previous cases. On the right lower side of this patient's mouth the second bicuspid had erupted irregularly and was growing completely out of the arch of the jaw towards the cheek. By the loss of this entirely useless tooth, which was already decayed where it pressed against the other teeth, an irregularity was corrected, a source of certain disaster to the neighbouring first bicuspid and molar was removed, and a scion tooth was provided for the replacement of the lost upper bicuspid. The root canal and two carious cavities in the crown were treated as before. Owing to the difficulty of extraction of a tooth so placed, the periosteum was partially stripped off in the process. It was kept mosit in the usual solution (mercuric chloride 1 in 2000), and was out of the mouth one and a half hours. Owing to the tightness with which the tooth fitted the artificial socket, no splint or ligature was required. On the following day the tooth was still firm and comfortable.

On the 8th June examination of the tooth showed the presence of a small sinus just above the margin of the gum. The patient stated that about a week or fortnight after the operation the tooth became very loose, but after continuing in that state for some days, it gradually got firmer again. It is now quite firm and satisfactory but for this sinus, which seems to be indicative of slight necrosis of the alveolus.

This is the only case which has required any subsequent treatment, whith consisted in an injection of peroxide of hydrogen, and of mercuric-chloride solution, and touching the margin of the gums with crystals of sulphate of copper. In this instance, too, the attachment of the gum of the distal surface seems very high up on the root, and is not nearly so satisfactory as in the other cases.

Case VII. was that of A. A., an apparently healthy young woman, aged twenty-one, who had lost the right upper first bicuspid about a year previously. The scion tooth was a large right upper second bicuspid extracted in the morning, 7th August, 1888, the day of the operation. It was not a very suitable tooth (1) from its being so much larger than the patient's own remaining bicuspid, and (2) from the pericementum shewing signs of very considerable inflammation towards the apex and all down one side. It was, however, the best of the few teeth available, and as the operation was performed as a demonstration in connection with a Post-graduate lecture at the National Dental Hospital, a certain degree of urgency may be admitted. From the largeness of the scion root, the artificial socket had to be made unusually large and the alveolus very considerably cut away, especially on the palatal aspect. The root canal was treated and filled as usual through a carious cavity in the crown, which was afterwards filled with gold. The tooth was kept moist during this process by the solution (Mercurie Chloride 1 in 2000), in which it had been lying since its extraction, five hours previously. The large crown was cut down till it fitted tightly between the adjoining teeth and articulated with its antagonists.

Neither splint nor ligature seemed necessary. Mr. Lancaster, the then house surgeon, took charge of the case, on which he reports as follows: Aug. 9th.—Patient has great pain, gum very much inflamed and surrounding tissue actually sensitive to pressure. Tooth firm. Lin. Iodi applied to the gums. 13th,.—Patient reports a decrease of pain, which is now diminishing, since her last visit. Still much local inflammation and tenderness. Tooth loose. 14th.—Pain still diminishing. Tooth ligatured, unwaxed silk and mastic varnish application. When last seen the case was doing well.

Case VII. was that of F. W. W., a schoolmaster of rather weak physique, aged twenty-seven, who had had the right upper canine and first bicuspid extracted some eight years previously for the relief of a crowded and irregular denture. The result of that needless operation was an unsightly gap, which marred the distinctness of his articulation. The scion tooth was extracted from the mouth of a healthy young girl, aged fifteen, for the relief of a crowded denture, on 15th August, 1888, and had been sent to me in a solution of mercuric chloride (about 1 in 3000). A large part of the root, involving the lower two-thirds of the labial surface, and extending to a considerable part of the distal and also slightly to the mesial surfaces, seemed entirely denuded of its pericemental membrane. During the preparation of the scion tooth, which was similar to that of the other cases, it was firmly held in a holder by the crown, thus obviating almost any manipulation of the pericementum. About 30 hours elapsed between the extraction and the insertion of the scion tooth. In the course of preparing the artificial socket, the floor of the antrum was perforated. The tooth fitted the socket so tightly that neither splint nor ligature was applied. On the third day after the operation the patient wrote to say that he was too unwell to keep his appointment for the following day. The pain commenced on the day following the operation, and was described as never having been so acute as to cause him much sleeplessness, but his "general feeling was one of complete inactivity and deplorable apathy." The tooth was already loose. On the fifth day after the operation the patient arrived with the firm intention of having the tooth removed. He referred the pain to the region of the antrum and described it as being "dull and lasting rather than acute and intermittent." He had no pain in the implanted tooth.

On examination I found the tooth was extremely loose and all the neighbouring parts in an acutely sensitive condition from inflammation. The gum on the labial surface was covered by a layer of cast-off epithelium with one small ulcer a little higher up, while a slight swelling was noticeable opposite the root on the palatal surface. There was a distinct swelling of the cheek below the right eye which was red and watery. The cheek was slightly flushed and tender on pressure, especially towards the nose. The results of the following treatment are interesting both from its efficacy and from its relative novelty in dental cases. At 11.30 a.m. a hypodermic injection was made at the junction of the cheek and gum over the implanted tooth, of five minims of Dr. Hugueschmidt's antipyrin and cocaine hydrochlorate solution. The relief was both immediate and complete, and continued for fully an hour, when the patient became anxious at a slight return of uncomfortableness. At 1 p.m. twenty grains of antipyrin dissolved in water were administered internally, at 2.15 p.m. a second dose of similar strength, and at 5.15 p.m. a third dose of half that amount. Warm fomentations were applied for about an hour (3.30-4.30). Meanwhile the tooth was fixed in a metal band splint with phosphate cement, and the patient left happy, comfortable, and even quite lively. He has since reported that he has had absolutely no pain subsequent to his last visit, but that he is disappointed in the continued looseness of the scion tooth.

(*To be continued.*)

WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

By Dudley Wilmot Buxton, M.D., B.S. Lond.
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Continued from page 51.

Diseases affecting the Valves of the Heart.

For practical purposes it will be convenient to group valvular affections under two categories, those affecting the mitral valves, and those affecting the aortic valves. Lesions of the right heart would not, when occurring alone, be likely to enter into the class of cases dangerous for nitrous oxide inhalation.

Both narrowing of the mitral valves, and their incompetence commonly follow scarlet fever, rheumatic fever, and so, may be found in persons of any age. Not only do the impediment to the circulation and the regurgitation through the orifice, which are incident to mitral stenosis and incompetence, lead to symptoms peculiar to the heart, but they bring about pathological conditions of the tissues and viscera of the body at large. It is important, therefore, to remember that in cases of mitral disease we may be dealing with persons whose kidneys and liver are diseased, and also whose lungs are water-logged by chronic impediment in the pulmonary circulation. As a rule the subjects of mitral disease, if the affection is at all advanced may be recognised without much difficulty—full blooded, flushed look about the face deepening to a purplish tint about the ears and lips, will be present, the nails will have the same cyanotic discolouration, the breathing will be laboured, especially after climbing stairs, and there will be a tendency to cough and wheeze. A glance at the large veins of the neck will show them to be full and pulsating, filling from below from incompetence of the valves. The typical mitral pulse which may be felt at the wrist is one of extreme irregularity, not only are the individual beats of unequal force, but the interval between them varies. This irregular pulse must be carefully dissociated in the mind from the intermittent pulse. In this last variety the individual beats are of the same force, and separated by an equal interval of time, but every now and again a beat is lost. The intermittent pulse not unfrequently occurs in persons in the full enjoyment of health, and so taken by itself has no pathological importance; not so with the irregular pulse, which means in every case an adynamic condition of the heart, the result of disease. With mitral disease sooner or later anasarca and dropsy are developed, dropsy affecting the feet, legs, lungs and brain. The great point to bear in mind in considering mitral disease is that there is some impediment to the return of venous blood, and due æration of the blood in the lungs. These conditions lead to the escape of fluids from the venules and veins, and consequent soddening of the tissues.

To revert for a moment to the effects likely to accrue to the heart itself. We find that the work of pumping blood through the lungs is increased, and as the brunt of this falls upon the right heart, it is that which will first suffer. The conditions of engorgement and imperfect nutrition of the heart muscle arising from the undue venosity of its blood must interfere with its powers of working. Now when we remember that the heart in health is always doing hard work, but always possesses a reserve power of doing more, we can readily understand how it is that when this reserve power is lost, as occurs in disease, the heart is incapable of sustaining an increased effort although it may be competent to fulfil the ordinary requirements of the organism. Hence it is that fainting is liable to occur when any unusual strain is imposed upon the heart. In mitral disease these attacks of syncope are very liable to take place, but they are not of the same grave significance as when the disease affects the aortic valves. The stenosis and incompetence are so commonly associated, as to make it convenient for us to group them together. Besides this association it is all important to remember that together with disease of the mitral valves there is pretty sure to be a further heart lesion present, namely, hypertrophy of the heart muscle, or as is more likely, hyprotrophy with dilatation.

In aortic valvular diseases the patients present a marked contrast to those afflicted with mitral disease, but as the lesions are not infrequently associated it is not always possible to separate the symptoms referable to one class of cases from those of the other. Whereas floridness merging into cyanosis marked the mitral patient, the appearance due to aortic disease is usually one of unnatural whiteness. The skin is dry and rather shrivelled, like parchment, the appearance being due to the imperfect way in which the blood becomes propelled through the aorta ; in the case of aortic stenosis the outlet into the artery being narrowed, in aortic incompetence, a backflow into the ventricle being allowed again, the regular output of blood is interfered with; and the due nourishment of the tissues is accordingly materially effected.

In aortic diseases we meet with two forms of pulse ; when there is stenosis, the heart works with great vigour to overcome the obstruction caused by the narrowing, but as the result is that the arterial tension is low, the pulse remains small in spite of the forcible, often painfully beating heart. When the aortic valves are incompetent, the arteries fill well at the ventricular contraction, but as the valves failed to close accurately, the blood flows back instead of forward, and we have accordingly the water-hammer, vanishing or Corrigen pulse, a pulse that is at first full, but suddenly disappears under the finger. This condition is brought out more readily when the arm is raised. Associated with aortic disease we frequently find anginoid pains. These pains like "Angina Pectoris" may come on over the region of the heart, and then pass down the left arm. In character they are usually stabbing and sometimes so severe as to cause the sufferer to fall writhing in agony upon the floor. A history of such attacks would make one suspicious of severe cardiac disease.

The syncopal attacks of aortic disease, although perhaps less frequent, are certainly more to be dreaded than in mitral disease as recovering from them is less a matter of certainty.

While mitral disease is so commonly the sequel of rheumatic fever, aortic trouble is usually the outcome of severe and continual strain, and hence athletes, navvies, soldiers, and sailors, are classes peculiarly liable to aortic disease.

In determining whether or not it is advisable to administer nitrous oxide to persons afflicted with mitral or aortic disease, we have to consider how far the affection has gone, and to what extent secondary lesions are present.

When valvular disease is present, but the person affected is free from definite heart symptoms, the administration of nitrous oxide is attended with little risk. When obstructive disease affecting the mitral or the aortic orifice is present, there is a greater strain imposed upon the heart than in other conditions by the retardation of the circulation in the lungs, but unless the dyspanæ is very considerable, nitrous oxide administration does little harm. However, each case must be decided upon its own merits. When there is a decided tendency to syncope the combination of a little ether vapour with the nitrous oxide, will be advantageous.

When the antecedent remarks have been read and the action which nitrous oxide exerts upon the heart and blood pressure is considered, it cannot but appear evident that cardiac diseases, should not be considered as direct contra-indications to nitrous oxide administration, only too frequently persons are subjected to a most detrimental shock through an ungrounded fear lest the anæsthetic would prove dangerous. Of course every person called upon to administer to a patient with heart disease would regard the case as requiring especial care and circumspection, and would take precautions, not the least of which would be having skilled assistance at hand in case of the supervention of syncope. It might be urged that since ether in combination with nitrous oxide, is recommended above, that ether might be advantageously used in place of gas for such cases, but the contention is not one which would find favour with those who possess much experience with these agents, and for the following reason. The irritant action of ether upon the mucous membrane of the respiratory tract produces coughing, so increases the work the heart has to perform, besides inducing some bronchial spasm. Now as these drawbacks are entirely obviated by using nitrous oxide, and allowing it to pass over ether it is manifestly better to adopt this method than to impose any additional strain on the overtaxed heart.

It is therefore wise to explain to the patient or his friends that although the administration is not free from risk, yet it is probably less dangerous then the shock of the pain. Then to commence the anæsthetisation with pure nitrous oxide, and when the patient is under its influence, allow the last five or six inspirations to be of nitrous oxide which has been allowed to flow over ether, and is so impregnated with its vapour.

To be continued.

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DENTAL EDUCATION.

The time seems to have arrived when the system of Dental Education at present favoured in this country should be carefully and critically examined. The present system which is undoubtedly constantly adding something to its efficiency has nevertheless had a sufficiently long life to show its quality by its fruits. The subject should be considered from these two points of view, viz. : How far the present arrangements are calculated to fulfil the purpose in view ; 2. What has been the result of this system as exemplified in work done by those who have qualified under it. There are other large questions involved in our subject of Dental Education, such a one is " the control of the Register " and also Representation on the Medical Council. Much has lately been written concerning the status of the Licentiate in Dental Surgery, and his position in his profession. Mr. Bullin has in this matter led the way—to us, however, the interest in this controversy as far as it bears on our present article is, that those practitioners who uphold Mr. Bullin's views clearly indicate that the Dental Student should be taught in a Dental School *all* that he requires to know to qualify himself for practice. This appears to us to be the inevitable sequence of the position held by these gentlemen. The very opposite policy has received a powerful impetus through Mr. Newland-Pedley's recent articles in the Medica periodicals which have been reprinted in the pages of the *British Journal of Dental Science*; and also by the initiation of a Dental Department in connection with Guy's Hospital where it is proposed to educate students completely for the L.D.S. As is probably well known to our readers Mr. Newland-Pedley advocates a closer union with the Medical profession and a more hearty co-operation and inter-communication of Medical and Dental Students. He believes that the proper method of educating the Dental Student is to attach a special Dental Department to the General Hospitals, as has been done at Guy's. Here are two propositions as to the future of the student and the profession : by means of the former, Dentistry becomes isolated and absolutely autonomous; while, according to the second, Dentistry becomes a specialism, while the dentist becomes a member of the Medical profession. Let us now briefly examine our present system according to our first position.

The education of the student is now divided sharply into Special and General. Under the special we include Practical Dental work,—Stopping, Extracting, Irregularities, etc. Dental Surgery and Pathology, Dental Anatomy, Mechanical Dentistry, and Metallurgy. While under General are included Anatomy, Physiology, Chemistry (theoreitical and practical), Materia Medica, Medicine, and Surgery. This, to anyone who has ever studied at all, will appear an alarming and formidable list, and this is to be got through in two years. Of necessity it is done much as the tourist, who attaches himself to a touring agent, "does" the continent in a few weeks.

Now of these general subjects, some are to the dentist of far greater importance than others, such are Chemistry, Materia Medica, Anatomy, Physiology and Surgery, and one of supreme importance, which is not in the curriculum, viz., Practical Physiology. And of these subjects the dental student according to our experience knows least of Chemistry, Materia Medica, and Histology.

Now there is a glaring anomaly in the arrangement of the lectures. A student entering in summer has to attend acourse of Lectures on Dental Anatomy. This subject is to say the least an intricate one, and presupposes an acquaintance with human anatomy, and what a terrible disadvantage the neophyte must be under, is only known to those who have experienced it. To the diligent student it is disheartening; it is moreover a wanton waste of energy which is the simple consequence of the evils of the standing arrangements. There is further a great loss of energy, involved in the walking to and fro from to one hospital to another.

Many of the evils we have pointed out can be remedied by a remodelling and extension of the teaching at the Special Hospital. This should absolutely include Chemistry, Materia Medica, and a thorough course of Histology. It would be a saving of energy and an incalculable gain in knowledge, to the student and a profit to the community in general, inasmuch as an extension of knowledge is an amplification of power of well-doing. What has been the result of the present system? Candidly we have as a profession not much to boast of considering our apparent advantages. The barrenness of our journals, the limited scope of the papers read at our so-called learned societies, are all without the smallest doubt, the direct result of our education. How can we expect our professional men after launching into the world as practitioners to develope as scientific observers, when they have never been taught properly the rudiments of those sciences which they must necessarily employ in their investigations.

DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.—The above club held their third Smoking Concert of the Session at Hummum's Hotel, Covent Garden, the chair being occupied by the Dean, Mr. Morton Smale. An excellent programme had been arranged and the concert certainly was in every respect a great success. The newly-formed Musical Society performed with great credit to themselves, a selection from "Pinafore" the principal parts being taken by Messrs. Hepburn, Williams, Wheatly, Barrett and Knowles. By special request Mr. Hepburn recited "A Medical Students' Dream" and Mr. J. Smith-Turner gave "Good St.

Anthony." Amongst the other gentlemen who contributed to the evening's pleasure were Messrs. Davies, Rae, Arliss, Egerton Hall, Garcia, and May.

DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.—At the annual dinner to be held on March 2nd at the Holborn Restaurant, the following visitors are expected to be present. Sir William MacCormac, Dr. Bristowe, Dr. Buxton, Dr. Ord, Pollock, Dr. Mitchell Bruce, Dr. Willcocks, Dr. Mott, Dr. Julius, Dr. Hewitt. Messrs. Christopher Heath, Hepburn, Matheson, Hern, Morton Smale, Storer Bennett, Read, Bailey, Truman, Victor Horsley, Rickman Godlee, Shield, Morgan, Boyd, Bland Sutton, Pearce Gould, Hutchinson, Woodhouse, Gregson, Lloyd Williams, Braun, Claude Rogers, Canton, J. Smith-Turner.

DONE TO DEATH BY A DENTIST.—Under this thrilling title the *Evening Post* recounts the following :—About 10 days ago Mary Scelwig, who lives near Halifax, Pennsylvania, complained to her husband that she was suffering with the toothache. At first she was most scornfully laughed at, and she received this unsympathetic treatment for several days without a word of protest, for she was an indulgent and affectionate woman. Several days passed, during which time she only occasionally referred to her extreme suffering, when, finally, her husband unpityingly remarked that she had better go to the dentist and have her teeth extracted. Mrs. Scelwig was of a nervous temperament, and she hesitated about going. Her husband became angry with her bewailing, and declared that he would leave the house if she did not stop it. The wife then determined to go to the dentist's, and, after much persuasion had been used, the husband was induced to go with her. At the dentist's office, before she got into the chair the woman almost fainted from nervousness, which had the effect of making the husband quite irascible, but with the assistance of the dentist she was placed in the chair, and the man with the forceps commenced the work of extraction. Mrs. Scelwig could not take an anæsthetic, and when two or three of her teeth had been taken out she pulled violently to escape the dentist's cruel operation. It was necessary to have 13 teeth removed, and the husband was determined not to permit his wife to leave the chair until every one had been taken out. To make the work easier for the dentist the husband held his wife's head and arms so that she could not move, and the work continued until all the teeth had been extacted. By this time the woman was exhausted and unable to rise from the chair. The two men realised that she was in a dangerous condition, and they at once applied restoratives. A physician was summoned, and every effort was made to revive the woman's lost powers, but it was of no avail, and she died two hours later.

Dental Drolleries.—The *Dental Record* supplies the following :—

" A difficulty experienced by most of us, even if we be unconscious of the defect, is the power of expression in language at once clear, brief, and comprehensive. Sailors, as a class, are peculiarly gifted in making themselves easily understood ; and Admiral Hall, in his excellent book bearing on this subject, gives a characteristic instance of 'Jack's' accomplishment in connexion with dental matters. A sailor wish- to have an aching tooth extracted, was asked by the operator as to the locality of the offender. 'Oh,' replied the patient, 'it's the hindermost grinder aloft, on the starboard quarter.' "

This from the *Archives of Dentistry* :—

" The following epitaph was recently noticed over the graves of one of our deceased brother dentists :

'View this grave-stone with all gravity ;
J——is filling his last cavity."

Abstracts of British & Foreign Journals.

"THE DENTAL ADVERTISER."

INVESTIGATIONS UPON THE DECAY OF THE TEETH.

By Heinrich Stern, M.A., Ph.D., M.D., New York.

The only difference between the formation of the teeth and that of the *epidermis* is, that in the former the protoplasmic elements which have undergone modification are present in lesser quantity than the inorganic elements, which must therefore be utilized by the organic constituents. In the epidermis, the components are almost entirely organic.

The epidermis is composed of numerous closely lying cellular strata, the most superficial of which are constantly exfoliated. On closer examination we find that all these cells take their origin from the layer nearest to the blood supply. This stratum consists of protoplasmic corpuscles possessing hereditary properties; new protoplasmic elements are generated by reproduction and proliferation. These develop in exactly the same manner as a mother cell, which they subsequently replace; the mother cell after germination gradually approaching the surface and thus being removed from its blood supply. As a cell approaches the surface it loses its original properties, becomes harder and more dry, and is finally converted into horny matter. Referring to the formation of the teeth he says the protoplasmic elements are deposited by the blood in the dental follicles, and the inorganic elements are carried there in a similar way. The cells then undergo the same modification as those of the epidermis. They differ from them, however, in that by their junction and accumulation they form a framework for the inorganic constituents of the tooth. The organic elements are not deposited by the blood in any single place, but are diffused uniformally in every direction; the different parts of the tooth and its contours are thus produced. If, however, pathological conditions such as scrofula and syphilis, are transmitted by heredity to the fœtus, they may prevent the proper formation of the tooth and produce various irregularities of structure. The blood-vessels do not extend or grow in the interior of the tooth, as is commonly believed; it is the tooth elements which grow, proliferate and force their way into the jaw, and surround the blood capillaries in such manner that the latter are placed into the interior of the tooth.

The vitality of the so-called dentine is preserved by the many protoplasmic cells it contains, which, owing to their connection with the blood-vessels, act as carriers of its nutritive material. External layer of the enamel, which consists chiefly of inorganic substances, as dead matter similar to the stratum corneum of the epidermis. The outer microscopic portions of this dead layer are loosened and exfoliated by means of the living cells present in the deeper parts of the enamel and the dentine, which crowd new inorganic substances towards the outer surface. The enamel and the *crusta petrosa* are only advanced modifications of the dentine, which has become mixed with inorganic substances and whose organic structure consists of modified protoplasmic cells deposited in this place by the blood in the form of white blood corpuscles. The comparative hardness of the enamel is due less to the direct influence of the inorganic substances that to the absence of the living protoplasmic cells. The same difference exists between the temporary and permanent teeth. The fœtus and the infant obtain only a small amount of food rich in lime. The blood, during intra- and the beginning of extra-uterine life, deposits only comparatively small quantities of calcareous matter, and therefore the structure of the first teeth, in their primary stage of evolution, is to a great extent of organic *origin*. The formation of inorganic structures, such as occur in the permanent teeth, demands a different kind of food and especially longer periods of time. The views at which Dr. Stern has arrived differ from other experimentators. He proceeds to enquire.—*Is the decay of the teeth due to the same influence to which I ascribe their formation, or is it dependent upon external local influences?* If a protoplasmic cell is deprived of its supply of nourishment and of the little heat and moisture which are absolutely necessary to its life, it will die gradually. What is here observed on a small scale is also seen in the fibres and tissues which are collections of cells, and in the organic bodies composed of them. If a tissue is deprived of any or all of the above mentioned requirements, a pathological condition ensues, and death of the tissue takes place. Such a condition may progressively occur in all the tissues of the body, until finally no living tissues are found, in other words, the body is dead. Everything that prevents the supply of nutriment to a part of an organized body, or destroys the vital activity of its cellular elements, becomes a cause of death.

As has been shown in the preceding, the formation and growth of the teeth depend principally upon the organic elements. We have seen that these elements are diffused in the form of protoplasmic cells over the entire structure of the tooth, with the exception of the outer enamel where they are no longer capable of life, that they constitute, to a certain extent, a framework in the intervals of which the inorganic substances are deposited. We have also seen that the continuations of the blood capillaries are formed by microscopic protoplasmic corpuscles, which again communicate with other protoplasmic cells. If the supply of blood carrying heat, moisture and nutriment to the tooth, is cut off, the tooth dies.

The nutritive supply is interrupted suddenly only in rare cases; usually this condition is developed gradually, at first in one, and later in several, and finally in all protoplasmic cells. The inorganic substances lodged between the protoplasmic corpuscles, being deprived of their framework, are slowly detached and become absorbed as soon as they reach a capillary. The patients often complain of pain in the teeth, although the operator may not detect a trace of any pathological condition. The pains are due to the pressure which the loosened elements exert upon the nerve filaments, and are most marked when the pathological condition is found immediately beneath the enamel; this is referable to a law which states that all nerves are most sensitive at their terminal extremity. Some of the causes of *absorptio dentis* are obstructions in the arteries as well as in the capillaries and veins, diminished heart action, inflammation, intense heat or cold, and may be classified.

1. Condition of health.
2. Hereditary pathological conditions.
3. Age.
4. Sex.
5. Race.
6. Climate.
7. Manner of employment.
8 Slow absorption of poisons.
9. Food.

10. Atmosphere.
11. Mechanical causes.
12. Bacteria.

With regard to the decay of the teeth from the periphery towards the centre, he does not deny its occurrence. A portion of the enamel must be removed before this can take place, which may be produced by *absorptio dentis*, or mechanical causes. If it occurs from *absorptio dentis*, a part of the dental structure must be in a condition of disease, so that acids penetrating the enamel by minute openings readily attack the interior of the teeth. If, however, some of the enamel has been removed by mechanical causes to such an extent that the dentine is exposed, the pain is more severe, but the decay advances more slowly, since the dental structure has not been previously undermined by *absorptio dentis*. He thinks that experiments practiced on extracted teeth are useless for purposes of exact investigation, since acids and chemical products attacking a dead body, do not necessarily have the same effect upon a normal and healthy structure. Although hydrochloric acid (HCl.) does not injure the texture of a *living* stomach, it will certainly act upon the structure of this organ after its removal from the body. The following reaction which takes place when starchy substances are mixed with the saliva, is scarcely sufficient to affect a tooth attacked by *absorptio dentis*, and has even less influence upon a healthy tooth. $C_6H_{10}O_5+H_2O=C_6H_{12}O_6$ Tartaric and other acids also attack teeth.

Literary Notices and Selections.

THE SUPPRESSION AND SPECIALISATION OF TEETH.

By John Humphreys, L.D.S.I.,

Lecturer on Dental Anatomy and Physiology, Queen's College, Birmingham.

(*Continued from page* 118.)

But cainotherium, an extinct ruminant of the Tertiary period, and bearing a strong resemblance to the dwarf musk deer of the present age, possessed the full mammalian dentition, with the incisor teeth in both jaws well developed, and the canines in close apposition to the premolars, no space intervening.

Rodents are restricted in the incisor region to a pair of scalpriform teeth, developed from persistent pulps, in both jaws, and a considerable interval separates them from the molar series behind.

The rodent type appears to have been developed from several distinct sources. Early in geological history, in strata beneath the chalk, a small marsupial, plagiaulax, existed, whose dentition was reduced and specialised to a rodent form. By studying the marsupials of the present day, we can gain a tolerable idea of the means whereby the limited dentition of the Rodentia has been accomplished.

In *Phalangista Cookii* there are six incisors in the upper jaw, but the medium pair are much the largest ; on either side of the jaw is a diminutive canine, beyond which are two, and occasionally three premolars, the first generally conical in form, and functionless ; and there are also four true molars in each jaw. In the lower jaw the incisors consist of a central pair which antagonise with the upper centrals, behind which are three rudimentary teeth, representing the canine and two first premolars, beyond which is the last premolar, which antagonises with its fellow in the upper jaw.

Phalangista vulpina shows a further reduction ; the incisors are $\frac{3-3}{2-2}$, but the central upper pair are much the largest ; the canine is small, while the premolars number two, one being conical and rudimentary. In the lower jaw the central incisors are still more rodent like, and in the space behind them and the permanent premolar is one minute tooth.

Phascolarctus fuscus exhibits a state further advanced ; the dental formula is : incisors $\frac{3-3}{1-1}$, canines $\frac{1-1}{0-0}$, premolars $\frac{1-1}{1-1}$, molars $\frac{4-4}{4-4}$.

In this instance the upper central incisors are much the largest, the two outer pairs being greatly reduced ; the canine is diminutive in shape, resembling the outer incisor ; there are no functionless premolars, but the premolars and molars in both jaws perfectly antagonise.

The front part of the lower jaw is occupied by a pair of large rodent-like incisors, behind which a large diastema exists, separating them by a considerable interval from the molar series, the other teeth being entirely suppressed.

But in *Phascolomys* we find the dentiticn so much reduced as to be quite rodent-like; the formula is: incisors $\frac{1-1}{1-1}$, canines $\frac{0-0}{0-0}$, premolars $\frac{1-1}{1-1}$, molars $\frac{4-4}{4-4}$; both pairs of incisors are strong, and developed from persistent pulps, as are likewise the premolar and molar teeth, bearing a close resemblance in this respect to many placental rodents; there are no functionless teeth, the canines having entirely disappeared, and a wide diastema exists in both jaws between the incisors in front and the molars behind.

Among placental rodents there are traces, as in the Leporidæ, of a once more numerous incisor dentition.

In hares and rabbits there still exists behind the large upper teeth a pair of minute teeth, which are of little service, and evidently crowded behind by the attenuation of the jaws.

Professor Ryder in speaking of the origin of rodents, refers to such teeth by saying: "The significance of accessory, rudimentary incisors, present in some forms of rodents, as pointing to the manner in which the evolution of the rodent type took place, may be over-rated; yet when it is borne in mind that in other groups the appearance of diastemata between the different kinds of teeth took place gradually, and in a way which unmistakably shows the gradual steps of the process, we may be excused for thinking the same to have been the case here, although without positive tangible evidence in the shape of intermediate fossil forms that exhibit such a passage from the ordinary type."

In an interesting article, pnblished by Professor Cope in the January number of the "American Naturalist," upon the "Origin of Rodentia," he states that he has discovered in the Eocene of Wyoming the missing link of the rodent chain, in a creature styled by him psittacotherium, which possessed two rodent-like incisors in the lower jaw, but which were not separated by diastemata from the other teeth.

Professor Marsh states that in tillotherium the first inferior incisor is rudimentary, the third is wanting, while the second is the specialised tooth.

Cope described calamadon as similar in every respect, but with the third incisor present, though of small size. Esthonyx possessed the same characteristics, the first tooth being rudimental, the second large and specialised, and the third rudimental. He therefore concludes that the inferior scalpriform incisor of rodents is the second tooth, the first and third being suppressed.

From the Lemurine group is also produced a strange rodent, the aye-aye (*Cheiromys*); its dentition being: incisors $\genfrac{}{}{0pt}{}{1-0}{1-1}$ canines $\genfrac{}{}{0pt}{}{0}{0}$, premolars $\genfrac{}{}{0pt}{}{1}{0}$, molars $\genfrac{}{}{0pt}{}{3}{3}$. The two pairs of incisors are developed from persistent pulps, and they are separated by long diastemata from the molar series behind, which resemble the teeth of omnivorous rodents. Its milk dentition is extremely interesting, as pointing backwards to its Lemurine origin; in the upper jaw are two small incisors, a canine, and three molars; in the lower jaw two small incisors and two small molars; occasionally it is stated that a third pair of milk incisors are found.

Hyrax appears to have had quite a different origin. Its formula is: incisors $\genfrac{}{}{0pt}{}{2}{2}$, canines $\genfrac{}{}{0pt}{}{0}{0}$, premolars $\genfrac{}{}{0pt}{}{4}{4}$, molars $\genfrac{}{}{0pt}{}{3}{8}$. The upper central incisors are powerful chisel-shaped teeth, growing from persistent pulps, in every respect similar to the rodent incisors, the second pair of teeth are small and soon lost while the outer pair are specialised for antagonism with the upper teeth; the central teeth; however, always remain; short diastemata separating them from the premolar series. The premolars and molars are all retained, and there is no appearance of diminution in size.

Throughout the Canivora the incisors are tolerably constant with the exception of the seal (*Phoca vitulina*), in which the central lower pair are not produced, rendering the incisor formula, incisors $\genfrac{}{}{0pt}{}{3-3}{2-2}$; the American shrew mole (*Scalops*) has the third lower pair absent. $\genfrac{}{}{0pt}{}{3-3}{2-2}$. The English hedgehog (*Erinaceus*) exhibits the same characteristic, likewise the shrew (*Sorex*).

Glisorex exhibits a further reduction, incisors $\genfrac{}{}{0pt}{}{2-2}{2-2}$, and echinops and ericulus have the same incisive formula.

Cheiroptera present all varieties in number.

In the common simple-nosed bat (*Vespertilio murinus*) the formula is: incisors $\genfrac{}{}{0pt}{}{2-2}{3-3}$, one pair wanting in the upper jaw, while the vampire bat (*Desmodus*) has molars $\genfrac{}{}{0pt}{}{1-1}{2-2}$.

Subjoined is a table showing the variations in number as given by Owen:—

$\genfrac{}{}{0pt}{}{0-0}{2-2}$ Lophozon perforatus.
$\genfrac{}{}{0pt}{}{1-1}{1-1}$ Molossus.

$\frac{1-1}{2-2}$ Nyctinoma.
$\frac{1-1}{3-3}$ Vespertilio paradoxus.
$\frac{2-2}{1-1}$ Noctilio.
$\frac{2-2}{2-2}$ Phyllostoma.
$\frac{2-2}{3-3}$ Plecotus.

Primates, including man and the true monkeys, have the incisors reduced to $\frac{2-2}{2-2}$, one pair, considered by many anatomists to be the third, being suppressed. Occasionally, however, one, and sometimes both missing teeth reappear in man; this is more frequent in the upper than the lower jaw. Sometimes they are in series between the laterals and the canine, but more frequently they are crowded behind the incisor teeth, having no room to erupt symmetrically in consequence of the contraction in the incisive region. More frequently they appear in a conical form, sometimes singly, at other times a pair of conical teeth are present. This subject has been fully treated by Professor Windle and myself, in a paper contributed to the "Journal of Anatomy and Physiology," Vol. XXI., page 84, styled "Man's Lost Incisors." Since writing the above I have met with many similar cases in practice which have materially confirmed the views therein expressed; and certainly, if Professor Ryder's opinion upon the importance of rudimentary teeth holds good, we may fairly conclude, by the frequent occurrence of extra and conical teeth in the intermaxillary bone, that they represent the incisor teeth missing in apes and man, and those of conical shape the degraded form to which all teeth revert to prior to suppression.

This is further confirmed by the diminution in size, conical shape, and final disappearance of the lateral incisors, which is very common in the middle and upper classes of society of the present day, which will lead in time, as suggested by Cope, to the entire suppression of the superior laterals.

I am at present collecting facts to prove the effects of heredity upon the teeth, and have been struck by the fact that if the parent evinced any tendency to decrease in size or number, the same result may often be perpetuated in one or more of the children.

Suppression of Canines.—Canines are essentially weapons of offence, and are possessed by the great majority of Mammals in greater or less degree. In the horse, however, we find that while they occur in the stallion they are rudimentary in mares, and finally disappear.

In the rhinoceros they are always wanting.

In ruminants we find, as a rule, they are totally suppressed in the upper jaw, while in the lower they are in series with the incisors, and identical in pattern, as in sheep and oxen.

The camel, however, possesses them both in the upper and lower jaws, where they are separated by short diastemata from the incisors, and are strong teeth, of rather formidable proportions.

In this guanaco they are also found in both jaws, of a recurved caniniform shape, the tooth in the lower jaw being separated, as in the camel, from the incisors.

In the muntjak and musk deer, which are hornless, the upper canines are present, and in the latter are of formidable proportions, quite tusk-like in character, and much longer in the male than the female; they were likewise found in the extinct doreatherium, and were doubtless produced as weapons of offence and defence.

It appears to be a general rule that horned ruminants are destitute of canine teeth as sexual weapons, while in hornless varieties they are usually present.

They are always absent in rodents and hyrax.

Insectivora present us with a variety of forms, thus:—In chrysochlora they are absent in both jaws. In scalops they are present above, but suppressed below. In the mole both are present, but while the upper is a powerful tooth supported by two roots, so unusual in canines, the lower is minute, and does not differ from the incisors preceding it. In the hedgehog both are wanting.

Suppression of Premolars.—Premolars are much more liable to be suppressed from shortening of the jaws and disuse, and they generally disappear from the front of the series.

Amongst Ungulates we find the pig possessing four premolars, though the first is considered by some anatomists as a milk tooth, as it comes up in front of the premolar series, having no deciduous predecessor.

But in Babiroussa, though the first two premolars are erupted, they are speedily lost in consequence of lack of nutrition, caused by the crowding out due to the powerful canine tusks.

In phacochærus, where the tusks attain to a much greater thickness, only the third and forth are formed in young animals in the upper jaw, but they are small and imperfectly formed, while in the lower jaw only the fourth premolar is erupted, but this, like its fellows in the upper jaw, is speedily shed, leaving the adult wart hog destitute of premolar teeth.

(*To be Continued*).

Reports of Societies.

STUDENTS' SOCIETY.

THE DENTAL HOSPITAL OF LONDON.

Annual Monthly Meeting, Held January 21st, 1889.

W. Hern, Esq., *President* in the Chair.

The minutes of the previous meeting were read and confirmed.

The President announced that Dr. Sterpenick, of Brussels, had presented a microscope to the Society, and a cordial vote of thanks for his handsome present was accorded by acclamation.

The President also announced that the council had carefully considered the suggestion brought forward by Mr. Baldwin at the previous meeting about reading the minutes *in intenso* and had made arrangements whereby they would be materially shortened in the future.

The President then called on the Secretary to read the Annual Report of the Council.

COUNCIL'S REPORT.

Gentlemen,

In presenting to you their 25th Annual Report, your council have pleasure in being able to record another very successful and prosperous year. The number of new members elected during the year is 36, and the average attendance at the Ordinary General Meetings has been over 36. The papers read before the Society during the past twelve months have been of great interest, and have well maintained that high standard of excellence which has been attained in the past.

The Library of the Society has been overhauled, and is now placed in a separate book-case, the keys of which are in the hands of the members of the Council, from any one of of whom books can be obtained subject to the ordinary library rules. A sum of money has been spent in purchasing copies of some of the Standard Text Books, and this forms a valuable addition to our Library.

Not the least pleasing occurrence during the past year has been the interchange of transaction, etc., with the Students' Society of the New York College of Dentistry, which has been accompanied by the transmission on our part of good wishes for the success of their Society. This has been a source of great gratification to all, as a sign of the good feeling which exists between us and our American confr éres. Communications have also been received, from the Students' Societies at Edinboro', Birmingham and Manchester, to whom the transactions of our Society have been sent, and in this manner we have been endeavouring to foster that spirit of friendship and reciprocity which should animate all the liberal professions.

Your Council regret that more interest has not been taken in the microscopical exhibits, and they hope in the course of the next season to find means to promote the exhibition of original work in this department.

Owing to the resignation of both the Secretaries your Council have thought it desirable to invite your esteemed President to continue in that capacity for another year, as his long and intimate connection with the Society is of great value in directing its affairs ; and he has kindly consented to do so subject to your wish and approbation.

You will be asked to-night to give your consent to an alteration of Rule III, which has been carefully considered and approved by the Council. This involves no alteration in the spirit of the Rule, but is merely a more precise interpretation thereof.

In conclusion, your Council beg to express the hope that each member of the Society will, by joining in the discussions and bringing forward cases of interest, contribute to the information of all, and help to maintain our present high position amongst all kindred Societies.

The Hon. Treasurer then read his report as follows :

TREASURER'S REPORT.

Mr. President and Gentlemen,

In presenting my annual report I have much pleasure in stating that financially the past year has been a successful one.

The total amount of subscriptions received from all sources amounted to £20. 8. 11 ; this amount exceeds that of any previous year by £5. 11. 0.

The balance standing to the credit of the Society at the end of 1887, was £16. 8. 7 ; this has been increased to £21. 3. 0½.

The expenditure of the Society during the past year amounted to £24. 13. 6 and this sum includes payments to the amount of £4. 19. 3 which should have been included in last year's accounts. It will therefore be seen from the above that the receipts exceeded the expenses by £4. 14. 5, and if the fact be taken into account that £4 19 3 really belongs to last year, we arrive at the conclusion that the practical balance on the working of the year has been £9. 13. 8½.

The Secretary then read the proposed alteration of Rule III, which had been suggested by the Council. On its being put to the vote it was carried unanimously.

It was proposed by Mr. Colyer in accordance with Rule XI. that Messrs. Robinson and Cormack should be appointed Scrutators to the ballot. This was seconded by Mr. Porter and carried.

The ballotting for office bearers for the year 1889, was then proceeded with.

On Casual Communications being called, Mr. Cohen brought forward three models showing

(I.) Congenital absence of laterals.
(II.) Space between Central Incisors.
(III.) Irregularly-placed Central Incisor.

The President then called on Mr. W. H. Dolamore for his paper on "Dental Abscess." (See page 44).

Mr. Harsant in opening the discussion, questioned whether the pulp can remain alive when pus is rising up around the neck of the tooth.

Mr. Baldwin called attention to the frequent occurrence of cold abscesses. A tooth which has given rise to no trouble, and has no sinus connected with it, is opened up, and the pulp cavity is found full of a thin serous fluid coming from a cold abscess at the apex.

The President warmly supported the idea of collective investigation brought forward by Mr. Dolamore, and called attention to the immense amount of instruction that could be obtained from examining all teeth extracted. He thought the cases alluded to of abscesses in connection with living pulps were to be explained by the death of the pulp in one of the roots while that portion in another has not yet become affected.

Mr. E. Lloyd Williams was not quite clear whether Mr. Dolamore meant by his paper to infer that local inflammation of the periosteum could arise at a point opposite to a spot in which septic material has passed through the side of a tooth. The septic material in such a case could only pass through along the dentinal tubes, and if this were Mr. Dolamore's meaning, he could not agree with him on that point.

Mr. Dolamore replied at length, quoting cases in support of his paper, he did not mean to infer that which Mr. Lloyd Williams had supposed, but imagined the septic matter found its way through the apical foramen.

The President then announced the result of the ballot, the nomination of the council, being in all cases supported. The office bearers for the ensuing year are—

President—Mr. W. Hern.

Vice-President—Mr. C. F. Rilot. Mr. J. F. Colyer.

Treasurer—Mr. F. C. Porter.

Secretaries—Mr. W. H. Dolamore, Mr. F. A. Harsant.

Curator and Librarian.—Mr. E. Preedy.

Councillors, *Senior*—Messrs. Black, Burton, Oliver, Parsons and Spray.

Junior—Messrs. Barrett, Briault, Forsyth, and Hern.

Mr. Baldwin then proposed in eulogistic terms a vote of thanks to the President and retiring officers, especially mentioning Mr. George Seymour's name. The vote was carried by acclamation. Mr. Hern and Mr. Seymour briefly replied.

The President then proposed the usual vote of thanks to the Editor of the *British Journal of Dental Science*, and the *Journal of the British Dental Association*, for their kindness in supplying the Society with copies of their valuable Journals.

The President also accorded a vote of thanks to Mr. Dolamore for his paper, and Mr. Cohen for his Casual Communications.

He then announced that the next meeting would take place on Monday, Feb. 11th, when Mr. M. Woolf would read a paper on "Gold and Richmond Crowns."

The meeting was then adjourned.

Dental News.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

During the January sittings of the examiners the following gentlemen were admitted licentiates in surgery: Henry Knowles, Yeadon, Leeds: Kenneth MacKinnon Douglas, Edinburgh: Sydney Harry Appleby Stephenson, Nottingham; and Theophilus Bulkeley Hyslop, Inverness. The following gentlemen passed the first professional examination for the license in dental surgery: Albert Maurice, London; Arthur Percy Stocken, Ealing; Charles Henry James Acret, Canada; Walter Graham Routledge, Exeter: Thomas Jackson, Preston, Lancashire. And the following gentlemen passed the final examination, and were admitted L.D.S., Edinburgh; Thomas Cuthill M'Kenzie, Edinburgh; John Edwin Husbands, Bristol; John Stewart, Edinburgh; Frederic Jones, Lancashire; and John Henry Larbalestier, Southampton.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

40, Leicester Square, W.C.

Next Meeting of above, Monday March 4th, at 8 p.m.

Paper by J. B. Sutton, F.R.C.S. "On the relation of Rickets to some forms of Odontomes."

Paper by R. H. Woodhouse. Remarks to open a discussion on Antiseptic Dental Surgery. Casual communications by Messrs. J. H. Mummery, & Maggs.

E. G. Betts, *Hon. Sec.*

VACANCY.

Owen's College, Manchester.—The post of Lecturer on Dental Anatomy and Physiology to the above College is vacant. Applications with testimonials must be forwarded before March 4th, to H. W. Holder, Registrar.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

UNPROFESSIONAL CONDUCT.

To the Editor of "The British Journal of Dental Science."

Sirs,—I desire to bring under your notice the following incident, which happened within the last fortnight, when I was visiting a home-patient in this town. A respectably dressed man knocked at the partly closed door, and entered. In a loud tone he asked "Is there anyone here as could do wi' a new set of teeth? If so, Mr.— (mentioning the name of a dentist whom I have never seen, nor had I ever heard of him prior to this,) of— will make 'em for 'em cheap, and good 'uns too." Finding no one desired his services, he then left.

Is it not a case of consummate impudence, (one can hardly call it by the polite term *lack of professional bearing in the interest of self-advancement*) for a dentist to carry on his profession (? trade) in this manner, after the style or an itinerant pedlar? I am sure you will agree with me that such an occurrence is a grave dishonour to a worthy profession, and I trust it will evoke from you, as editors of one of its most important organs, strong tones of disapproval. Hoping that the ventilation of this incident may bring about a change for the better, I am, Sirs,

Yours very sincerely,
J. PIXTON WALKER, M.R.C.S., Eng., L.R.C.P., Lond.
Resident Medical Officer.

(Mr. Walker does not mention whether the "Dentist" is upon the Register. All professional men deplore such gross conduct. Ed., B. J. of D. Sc.)

Hospital Reports.

Monthly Statement of operations performed at the Dental Hospital of London, Leicester Square, from Jan. 1st to Jan. 31st, 1889:—

Number of patients attended		
Extractions	Children under 14	483
	Adults	854
	Under Nitrous Oxide	922
Gold Stoppings		345
Other Stoppings		1178
Advice		201
Irregularities of the Teeth		114
Miscellaneous and Dressings		428
Total		4525

F. A. Harstant,
T. E. Constant, } *House Surgeons.*
J. P. Smith,

Monthly Statement of operations performed at the National Dental Hospital, from Jan. 1st to Jan. 31st, 1889:—

Number of patients attended		1972
Extractions	Children under 14	279
	Adults	483
	Under Nitrous Oxide	599
Gold Stoppings		67
Other Stoppings		443

Advice	404
Irregularities of the Teeth	83
Miscellaneous	235
Total	2593

E. C. Fisk, L.D.S., Eng., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of January, 1889 :—

Number of Patients attended		991
Extractions	Children under 14 Adults	802
	Under Nitrous Oxide	109
Gold Stoppings		32
Other Stoppings		96
Miscellaneous		245
Total		1284

P. A. Linnell, *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.

3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only ; and we also beg to call particular attention to the importance of a carefully-penned signature and address.

4. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.

5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under :

Twelve Months (post free) - - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291 Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 507. LONDON, MAR. 1st, 1889. VOL. XXXII.

SOME METHODS OF CROWNING USING ENGLISH TEETH.

BY THOS. G. READ, D.M.D.,Harv, L.D.S., Eng.
Assistant Dental Surgeon to the National Dental Hospital.

Crowning should reduce the chance of destruction of tooth substance to the minimum.

It is desirable for a crown to be natural in appearance, strong enough to resist the crushing strain of mastication and capable of being quickly constructed. A chronic abscess, in connection with a broken down tooth, which shows no tendency to yield to treatment by dressing, &c., will often rapidly disperse where the stump is properly crowned and bitten on, the cause of irritation having been non-use.

When a bicuspid, or molar tooth is broken down with an unexposed living pulp, it will usually be best to crown the stump with an all gold cap, as then very little tooth tissue need be removed.

If the pulp be dead, adjust the rubber-dam, open the chamber well and remove *debris* of tooth and pulp; the canals then having been made thoroughly antiseptic, should be filled with gutta-percha dissolved in chloroform, and gutta-percha cones. When the pulp has been recently destroyed, thin oxychloride of zinc should take the place of the dissolved gutta-percha, cones of gutta-percha being used to drive it in place.

The great drawback to the various forms of pivots is the tendency saliva has of obtaining access to the stump, where its decomposition induces caries. The Bonwill Crown was an ingenious idea, but practice has proved it to be a failure.

The Logan Crown is of very little greater practical value than the Bonwill. The pin often has a wrong direction; set with osteo, or gutta-percha, the setting usually washes out; when with amalgam the fault is present of all crowns set with that material, viz., the general discoloration and the black joint; mounted with a metal collar, as in all collar crowns the band shows, and soldered to a cap, the face, if ground, cannot be polished. The Knapp Crown is very strong, but the amount of gold used in making this form is an objectionable feature.

A cap crown has the most points in its favour, and is very satisfactory, the four following varieties will be found to meet all those cases to which porcelain crowns are capable of being applied, they have a special advantage in that the porcelain used in each case can be obtained from the general stock of English teeth, thus giving a much larger selection that if special teeth be used.

(1) The flat tooth crown. (2) The tube tooth crown. (3) The faced crown. (4) The saddle-back tooth crown.

The first two are suitable for centrals, laterals and canines and the last two for bicuspids and molars.

In making any of the above crowns it is necessary to cut the stump down at the labio-cervical margin to a point a little beneath the gum edge, it may be left standing above the gum on the lingual surface.

The enamel is now trimmed off all round the stump with chisels, when this is accomplished the edge should be squared with a squaring bur.

The four crowns named above will now be briefly described. The flat tooth crown is strong, but there is a false appearance, which is found with all backed teeth. It consists of a band passing round the stump below the gum, to this a top is soldered and a pin added to pass into the canal, to this cap a backed flat tooth is soldered.

The tube tooth crown is in appearance the most natural made. It consists of a cap as for a flat tooth crown, only the pin is left long on the occluding surface, the pin having been bent to the required angle a tube tooth is fitted and sulphured to the cap.

The faced crown is capable of affording great masticating power. It consists of a metal band and top, and a porcelain labial face, the porcelain used being a backed flat tooth.

The saddle-back-tooth crown has a very natural appearance, but is not as strong as the faced crown. It consists of a metal band high at the lingual surface, and gradually sloping to the gum at the labio-cervical margin, to this band a backed saddle-back-tooth is soldered, the pin surface of the tooth previous to backing being ground flat with a safety-edged stone to simplify fitting to the band and the bite.

THE USE OF COCAINE FOR THE ALLEVIATION OF PAIN DURING THE EXTRACTION OF THE TEETH.*

By Edwin Houghton, L.D.S.

Mr. President and Gentlemen,

I do not intend to-night to enter upon a detailed description of cocaine, with the history of which you are familiar, the subject having been brought before you last session in an able paper by Mr. W. Simms; but shall confine myself entirely to experience of the drug in private practice. Commencing to use cocaine in the early part of 1886, my first experiment was successful, but I did not feel confident in its application, until I had had some personal experience of its effects. Since 1886 I have used it with varying success, but did not systematically take notes until May of last year. I shall to-night read a brief summary of the cases where I have injected cocaine to alleviate pain during extraction of teeth.

My notes record the extraction of 676 teeth; of these extractions 501 were painless; 136 slightly painful; 39 were painful, in fact in these 39 cases the cocaine seemed to have no effect whatever.

Entering more into detail I will take the extractions from the upper jaw first.

Of 122 incisors and canines, 107 were painless; 13 slightly painful; 2 painful.

Of 130 bicuspids, 107 were painless; 13 slightly painful; 7 painful.

Of 162 molars extracted, 131 were painless; 23 slightly painful and 8 painful.

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* A Paper read before the Odontological Society of Manchester.

Of 33 wisdom teeth extracted, 20 were painless ; 10 slightly painful ; and 3 painful.

Total 447, of which 20 were painful.

I have used cocaine for the extraction of 229 teeth from the lower maxilla.

Of 17 incisors and canines, 14 were painless, and 3 slightly painful.

Of 51 bicuspids, 32 gave no pain ; 16 slight pain ; and 3 painful.

Of 117 molars 79 were painless ; 30 slightly painful ; and 8 were painful.

Of 44 wisdom, 18 painless ; 18 slightly painful ; 8 painful.

You will see by these figures that the successful use of cocaine seems to depend a great deal upon the position of the teeth. The success is very marked in the extraction of the upper teeth, the number of total failures being only 4½ per cent. I have not used it so frequently for the lower teeth. It is more successful for the extraction of the incisors, canines, bicuspids, and first molars, but it is rarely successful with the wisdom teeth. The percentage of failures in the molars being 6½ per cent., and in the wisdom teeth 18 per cent.

I do not find it very reliable when there is a considerable amount of periostitis present, as the injection of the cocaine often causes severe pain, and out of 45 cases in which I have tried it only 17 were successful. Out of the number of cases recorded there has been 40 in which unpleasant symptoms were manifested after the injection of cocaine. The most frequent was sickness. I ascribe these disagreeable effects in a great measure to the impurity of the cocaine, for the series of bad cases disappeared when a fresh supply of cocaine was procured.

Since last October I have used the Tabloid form and have only had 13 cases in which anything unusual appeared, and with one exception these were only slight symptoms of sickness.

The exceptional case was that of a lady who was sent to me by her medical adviser to have a lower molar extracted with the application of cocaine. She was in a very delicate state of health, and sometime previously had nitrous oxide administered but was so very ill at the time, and afterwards, that she was recommended not take it again. I got the tooth out without causing much pain, but soon after it was extracted she began to be very sick, and complained of feeling faint. Some brandy, was given her, which seemed to put her right at once, and she was quite well ten minutes after the extraction. Her sister told me she often had similar attacks, so whether the cocaine was the offender in this case I cannot say, brandy, or a strong cup of coffee seem to have a most beneficial effect, should disagreeable effects supervene.

There is one thing I should like to mention. In all the cases where the cocaine produced disagreeable symptoms, the patients were suffering severely from indigestion, in fact nearly all were confirmed dyspeptics. I do not know if this has been noticed before ; it is certainly a remarkable coincidence.

I have given you a brief summary of the cases in which I have used cocaine, and will now proceed to describe a few individual cases so that you can judge of its usefulness.

No. 1. A young lady about 23. She had alveolar abscesses at the roots of second lower bicuspid, and first lower molar, one grain of cocaine was injected, the extraction proved very difficult, and took three minutes, but was perfectly painless.

Case 2. A lady about 30. Eight teeth from the upper jaw, and two lower bicuspids removed, painless. One grain used.

Case 3. Lady. Nine teeth extracted from upper jaw, Painless. One grain.

Case 4, was that of a lady about 40. I removed 31 teeth and roots from her mouth in four visits, she only felt one being extracted, and that very slightly. Three quarters of a grain was used at each visit, and she said she was better at the end of the operation than she had been for some years previously.

I will not quote any more cases, as perhaps these mentioned will be sufficient to induce you to give cocaine a fair trial. I do not say it is suitable for every case, and nothing but experience will teach us when it should, or should not be administered. With a difficult extraction requiring more time than we can get from the inhalation of nitrous oxide, I think it is invaluable, for it enables the operator to do his work skilfully and carefully while inflicting the minimum of pain and inconvenience to the patient. It is not perfect, I admit, but have we any anæsthetic that is? How many times do we hear of patients' complaining of the after effect of nitrous oxide or chloroform. I do not think that the after effects of cocaine are more disagreeable than those of either gas, or chloroform, as in the majority of cases they pass away within an hour of the operation. In most of the cases quoted, one grain of cocaine was injected, but since using the tabloids, half a grain was found sufficient. I dissolve the half a grain in from 30 to 60 m. of water, using the smaller quantity when the gum is hard and dense, the larger when the gums are soft and spongy. I find these answer admirably.

One of the difficulties I had to contend with when commencing to use cocaine, was the poor quality of the syringes sold for this purpose. I have had one made which will be passed round and you will see that it is somewhat different in shape to those usually supplied. The two arms are of great service when considerable pressure is required to force the solution into the tissues.

I must now bring my paper to a conclusion, having endeavoured to make it as practical as possible. The subject is one of great interest to me, and I should be glad if those gentlemen who use cocaine would take notes of their cases, as it is the only way in which we can get reliable data to work upon.

WHAT CAUSED THE DEATH? PHTHISICAL HÆMOPTYSIS, OR HÆMATEMESIS.

By Geo. Rogers.

At 6.30 p.m., Aug. 24, 1886, I was requested in a very urgent manner to see Samuel Rowlands, aged 27, a farmer and artillery volunteer, who at 10.30 the same day had an operation done on him by the surgeon to his battery, who was an ex-army surgeon. I was informed that Rowlands had been bleeding ever since the operation. and had twice fainted.

Not being a general practitioner I inquired why I was so urgently requested to attend him when there were so many general practitioners in the town. The messenger replied that he had seen four of them, but they had refused to attend the patient, one who had excused himself on the plea of having a very dangerous case on hand, and half an hour afterwards seen playing lawn tennis. No. 2 said the gentleman who had operated and himself were not acquainted with each other—he could not interfere. No. 3 said he had given up all else but consulting practice, and No. 4 would not go except he had a five-shilling fee paid him first.

The battery surgeon was engaged with his battery who had ball-firing practice that day.

The only information I could obtain was that something had been cut in the mouth by the doctor.

Providing myself with syringe, cotton wool and liquor of perchloride of iron, I went with the messenger and found the man in bed and evidences about him of extensive bleeding. I washed out the mouth with lukewarm water freeing it from all clots of blood, and on examination found blood flowing from an incision through the tissues in the near vicinity of the inferior dental artery where it emerges from its bony canal at the mental foramen.

I applied a pledget of cotton wool saturated with liquoris ferri perchlor. fort. and kept it in position by bandaging the chin and head with a tailed bandage, I kept this applied for twenty minutes and found on examination that the bleeding had ceased. I now gave the patient some iced brandy which I directed him to keep in his mouth for a few moments before swallowing. Ten minutes after this I again examined the mouth which I found altogether free of blood.

The battery surgeon now made his appearance, when I explained to him what had been done and the result; he thanked me for my attendance, complimented me on the treatment, and took over the case.

We then looked to see the quantity of blood which had been lost, we found two zinc pails and three chambers full of coagula and water, and estimated that five pints of blood had been lost by the patient, the next day I was told no further bleeding had taken place, and the patient was still in bed.

A month after this I received a note signed by the battery surgeon requesting me to see the patient at his father's farm to which he had been removed for the benefit of sea-air, etc.; for the purpose of extracting some badly decayed teeth and roots of teeth which were suppurating.

At 3.30 I found him with his mouth very much swollen, so much so, that I could with difficulty insert the forceps, but after some time I succeeded in getting the mouth sufficiently wide open to make a careful examination, and found the gums in a very bad state, a whitish and very offensive discharge was being exuded by them round the necks of the teeth, so offensive was this that I was compelled to use a solution of permanganate of potash, they were very much swollen as were also the glands. I suspected the patient had been taking mercury in some form or other, but I was assured by his wife that he had taken only the medicines which he had had from his doctor (the battery surgeon,) who told me he had given him nothing but tonics, however, I found no ulceration which so frequently accompanies mercurial poisoning, neither was there any soreness of the throat, and there was very little bleeding. After I had extracted the roots of 1st and 2nd bicuspids, 1st and 2nd molars on the right side, the 1st and 2nd molars, and 2nd bicuspid of left side. I could not estimate that more than ½oz, or the old fashioned tablespoonful, had been lost in the operation.

I stayed with the patient for over an hour, and in that time frequently examined the mouth but found no hæmorrhage from the injured part, and I left the patient in a very hopeful and jubilant state, he was happy on account of his being so easily relieved of his teeth. And I am informed by his wife and mother, as also his father and brothers, that he spent the remaining portion of the day up till 9.30 p.m. in joking about the beautiful new set of teeth he would soon have, and in singing Sankey and Moody hymns; he went to bed at 9.30 p.m. in the best of spirits.

At 5.30 the next morning I was called to attend him, the brothers who were the messengers told me that he had at 5.15 alarmed his wife by suddenly vomiting blood.

I took with me Acid Tannic, Sulphuric Acid Tr. Opii, bandages, and some ice which I fortunately had by me.

I found him at 5.50 lying in bed complaining of pains in his belly and in a few minutes after my arrival he vomited blood, which I purposely caught in a chamber in order to ascertain its quality.

I then carefully examined his mouth, but found no indications of bleeding from the gums, so immediately wrote a note to the nearest general practitioner stating what had taken place, and asking his immediate attendance. Before his arrival the patient said he required the use of his bowels, and as no bed-pan, or night commode was available, I reluctantly consented to the use of a chamber by him, for this purpose he was assisted gently out of bed, he then passed with evident relief, a very offensive stool, very black, but no blood was with it. He was put back into bed, when he directly vomited blood again, I then gave him some ice and two teaspoonfuls of brandy in ice water, which seemed to stop all his attempts at retching, he smiled and said I always seemed to do him good. I then saw the Doctor I had sent the note to. I went out to meet him, told him the history of the case, and what had taken place since I had seen the patient that morning, the Medico, without seeming to listen to what I had to say, hastened away to the patient who was then lying in a state of collapse, he had not vomited since I administered the iced brandy. Thinking from the way in which the Doctor treated my communication, that he resented my interference, I sat in the adjoining room to where the patient was lying.

The Doctor did not seem to think there was any immediate danger, and diagnosed the case as Hæmoptysis, and ordered a mixture of acid sulph. dil., and inf. Rosa acid, and for the patient to suck ice.

It was now 6.30, and before the medicine could be procured the patient died.

There was no *post mortem*! A certificate of death was given by the doctor, who certified phthisis, the immediate cause of death being hæmorrhage from the lungs.

Now in this case, the reader should note, that an apparently healthy young man, having no indications of phthisis about him, and without any history of phthisis in his family; who had been attacked by abscess at root of a bicuspid (inferior), which caused a swelling of the submaxillary gland, had the gum in the vicinity of the abscess lanced—the abscess was not reached! The artery was cut through, an extraordinary loss of blood followed the operation of cutting; the patient was badly nursed and fed after this loss of blood. At the end of thirty days he was operated on, the roots of eight teeth were extracted with the loss of less than half an ounce of blood, that fourteen hours after the operation of extraction, the patient vomited blood, not in a coagulated state, which would have been the case if the bleeding had resulted from the operation of extraction, but in a perfectly fluid state.

If a *post mortem* had taken place, the friends and relatives were quite willing that such an examination should be made, but it was not done, had it occurred it may have been found that Hæmatemesis, and not Hæmoptysis was the cause of death.

In conclusion, may I suggest that the patient's enforced abstinence from his usual dietary, combined with his great loss of blood, a month previous to my operating on him, the bad nursing, and bad dietary to which a man in his state was subject, did contribute to the result from which he died, and that the cause of death should have been stated as Hæmatemesis rather than Hæmoptysis. Does this case not indicate the care with which all operations in the mouth should be conducted, and afterwards noted?

THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE ANTRUM OF HIGHMORE.

By Dr. Moritz Schmidt.

The diagnosis of diseases of the antrum of Highmore, and more especially of accumulations of pus has hitherto been a matter of the greatest difficulty in the majority of cases. Every one must have met with cases in which he was in doubt for a long time as to the exact state of things; I must own that, judging from my present experience, I fear I must have omitted to diagnose many cases of empyema of the antrum.

The latest publications on the subject, amongst others, the careful study of Walb, and one by Bronner of Bradford, published in the *Lancet* of August 1888, give on the whole only the generally diagnostic signs by which the presence of pus may be guessed at with more or less probability. Ziem introduced a more positive method of diagnosis; if he suspects disease of the antrum he removes a molar tooth even if it be sound, he then drills a hole through the alveolus into the antrum and in a remarkably large proportion of cases he is able to demonstrate the presence of disease. Putting aside the fact that this method cannot be employed in cases in which all the teeth are missing, it has always seemed to me very objectionable to remove a healthy tooth with the possibility of finding one's self mistaken in the diagnosis. For some time past now I have used a method which is so simple that it ought to meet all the requirements of diagnosis, *i.e.*, the exploratory puncture through the osseous partition which separates the antrum from the nose and which is almost without exception very thin.

The method I have suggested is as follows: I commence by inserting a small plug of cotton wool into the inferior meatus of the nose under the anterior portion of the lower turbinated bone, I saturate it with 20 per cent. of cocaine lotion, and allow it to remain there for ten minutes. I then raise the anterior portion of the meatus with a hypodermic syringe which I push inwards in an oblique direction somewhat towards the outer meatus of the ear. If I do not succeed in getting it in at one spot I try another a little above, or further back. In the majority of cases there is no difficulty whatever in boring through the bony partition at some spot, and this enables us to show the patient at once the contents of his antrum. Needless to say, the syringe must be most carefully disinfected. I was in the habit at first of using a perfectly straight canula about twice as long, and as thick as the ordinary ones, and of thrusting it in an oblique direction by keeping as close as possible to the septum. Later on I found it more practical to use, especially in cases of malformation of the septum, a canula bent somewhat like an Eustachian catheter. I had them made also rather stronger, for occasionally the osseous wall is thicker and requires a greater exertion of strength in order to perforate it. The points of these canulæ should not be too fine, but rather more rounded and sharp, they should be furnished with a small cutting edge, otherwise the point is very liable to get broken off.

Performed in this way, the operation causes hardly any pain; I have met with no kind of injury after it. In the majority of cases it will be possible to draw out some pus, but small portions of a solid growth might also be removed in this way, for the purpose of microscopical examination.

Within the last month I have thus diagnosed an empyema in sixteen cases, in one instance both sides; once I found a collection of colloid fluid; and besides these, I have also made an exploratory puncture in twelve cases with a negative result, but also without causing any injury. I can thus confirm Zeim's statement as to the frequency of the occurrence of this affection.

The symptoms which give rise to the suspicion of disease of the antrum are, first and principally, headache, unilateral, usually frontal, just above the root of the nose, so as to lead one to suspect disease of the frontal cavity, not permanent but occurring only at times; occasionally also disagreeable subjective odours lasting only a very short time, and visible accumulations of pus in the middle nasal meatus and in the hiatus semilunaris.

I have nothing new to bring forward concerning the etiology of the affection, but I incline to the belief that the disease depends, in the large majority of cases, upon the presence of diseased roots of teeth, for even in the case of edentulous patients, they have certainly had bad teeth. In one case, the second incisor tooth was the starting point of the affection. The extension of disease from the nasal mucous membrane to that of the antrum is quite credible, but I have never met with such a case.

The treatment consists in making as free an opening as possible for the exit of the pus, and also for the injection of disinfecting solutions.

As the treatment usually extends over several months, it should be of such a nature that the patient can make the necessary injections for himself, for otherwise it is quite impossible for patients living at any distance to submit to this treatment. On these grounds, I have come to the conclusion that the methods advocated by Stoerek, and Hartmann of making the injection through the natural openings are not to be recommended, for the evacuation of the pus never can be perfect. There only then remain two ways either through the lower nasal region, or through the alveoli. I have often performed Mikalicz's operation, opening the antrum through the lowest nasal meatus, but I find it gives too ragged an opening and it is impossible to use the instrument if the nostril is at all narrow. I have used with success a gimlet five millimetres in diameter with two cutting edges, similar in shape to those which carpenters use with a bow. The injections can be made through a Eustachian catheter. The disadvantage of this operation is, that even intelligent patients find real difficulty in learning to pass the catheter into the artificial opening, so that the injections have almost always to be made by the surgeon. Even medical men who are not used to perform operations on the nose often cannot learn to pass the catheter.

On this account in the last cases I have seen, I have returned to the old operation of making an opening through the alveolus. It has the very great advantage that the opening lies in the most dependent part, and that the patients soon learn to make the injections themselves and to repeat them several times a day.

It is of the utmost importance not to make too small an opening. It is also important to enter the cavity through the socket of the diseased tooth if this can be found. The operation can easily be performed by means of a gimlet, or better still, with an American dental engine.

The case is somewhat different if the jaws are edentulous. Here after using cocaine I make a crucial incision in the region of the second bicuspid, I separate the flaps and as a large drill does not adhere so easily, I begin by drilling a narrow exploring canal by means of a small instrument in a median and somewhat diagonal direction and then I make the final one which must be about 4 mm. wide. The best step is to insert a clean silver tube with a small plate attached to it. It must be 2 centimetres long, and must not have holes on the sides, for granulations are very apt to grow into these, and thus to narrow the lumen of the tube. It should be about 4 millimetres wide. The inferior plate must also have a small opening, in order to fix the tube by means of a wire or a thread to one of the neighbouring teeth.

It is of still more importance, on the one hand, in order to keep the tube in position, and on the other to prevent the entrance of food, that a dentist should be instructed to make a proper plate in each case, so as to keep the opening closed.

I think it is not advisable to provide the dental plate with a plug instead of a tube for the purpose of keeping the opening patent; this makes it much more difficult to insert the plate, and gives rise to unnecessary irritation in the neighbourhood of the passage.

In this way it is very easy for the patient to wash out his antrum two or three times a day with a disinfecting lotion, at the temperature of the body; this is injected by means of a small pointed syringe, or an irrigator. I usually use solutions of boric acid, or of permanganate cf potash.

I was still engaged in writing this short paper when I was informed that an identical, or very similar process had been published recently. I have not been able to see this paper, or to learn anything further about it. As the method seems to be recommended independently by two observers, medical men should be all the more inclined to give it a trial, and the patient will derive all the more benefit from it.

WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

By Dudley Wilmot Buxton, M.D., B.S. Lond.
Member of the Royal College of Surgeons and of the Royal College of Physicians of England, Administrator and Teacher of Anæsthetics in University College Hospital, London; Administrator of Anæsthetics in the Hospital for Women and the Dental Hospital of London.

Continued from page 162.

Passing from the consideration of diseases affecting the valves and substance of the heart to those implicating the pericardium, we find that our enquiry is here pretty narrowly limited. In pericardial disease it will be satisfactory for the end we have in view to consider—

Acute inflammation,
Chronic inflammation,
Effusion into the pericardium.

In operations for the relief of hydrops pericardii, and distention of the pericardium, it is usual to trust to a less transient anæsthesia than that induced by nitrous oxide, and so the only cases which are liable to come under the hands of the administrator of the gas, are old standing, chronic cases where the symptoms have been slight, and those in which adhesions have been formed between the layers of the visceral and parietal pericardium. Such conditions may exist for a very prolonged time without producing serious inconvenience, save shortness of breath, and weakened heart action. There is often a tendency to syncope, and this would suggest caution in proposing anæsthetisation, unless there were a *necessity* for an operation, that is a *necessity* as opposed to a question of expediency.

In considering, then, cases of pericardial affections we should enquire, firstly, as to the nature of the lesion, and, secondly, as to whether marked symptoms have been elicited, more especially whether syncope or "feelings of faintness" have been commonly induced by undue exertion, fatigue, after meals, etc. If we are able to determine that the usual accidents of life, in the cases of persons who have not been invalided and so protected from them, have not caused serious heart failure or oppression, it is reasonable to believe that the initial stimulation of the heart due to gas, or the subsequent disturbance of the pulmonary and systemic circulation, will not bring about dangerous complications. It should be borne in mind that in cases of longstanding pericardial adhesion, hypertrophy of the heart is apt to be caused and hence the remarks made above upon hypertrophy and dilatation deserve consideration in the present connexion.

Diseased arteries are of no small importance in considering the advisability of giving nitrous oxide, but more so, inasmuch as they afford a pretty true criterion of the general vigour of the individual, than on account of the particular disease.

Aneurism of the aorta, and dilatation of the aorta are conditions which, although not more antipathetic to nitrous oxide than to chloroform or ether are yet sufficiently serious to justify a refusal to administer unless the administrator be fortified by the full consent of the patient and his friends and medical attendant after due and careful weighing of the *pros* and *cons*. Here two dangers would be considered. The probable onset of syncope and the possible rupture of the aneurism if unconscious or semi-unconscious struggling should occur, or even from the interference with the circulation.

The question, to be decided would be, how far the disease was advanced, and how far gone were the arterial walls, as well as what was the condition of the heart itself.

The size of the aneurism, the rate at which it had increased in bulk, with the presence, and severity of "pressure symptoms" would help one in investigating the first point. With a clanging brassy cough, a noisy stertorous breathing, with inequality between the size of the pupils, and undue fixidness of the pupillary muscles, with pain and œdema down one arm, we should fear a large intrathoracic tumour pressing upon the recurrent laryngeal nerve, and so rendering the larynx more or less *hors de combat* implication of the sympathetic and brachial plexuses would also be feared, while a grave condition of heart enfeeblement might be apprehended. Intrathoracic growths producing the above symptoms would be less anxious to the administrator as their existence might be compatible with fair action alike of heart and lungs, although upon the other hand, very grave impairment of pulmonary movements will in some cases be caused by such tumours and consequent danger arise to respiration. When symptoms are slight and the growth of the aneurism is slow, there is little more fear of untoward effects resulting from the administration of nitrous oxide gas, than when it is given to a healthy individual.

Rigid cordlike arteries and locomotor vessels are conditions readily recognised by feeling, and looking at the radial pulse, the more so as the owners of such vessels are commonly of spare and wasted aspect. Their significance is that the individual is prematurely old, it is a wise saying that "a man is as old as his arteries," and when his arteries are rigid, his tissues are ill-nourished and his vitality is low. These persons are unfavourable subjects of anæsthetics, alike because their arteries are liable to be enlarged and aneurismal, and undue strain may produce a rupture of a cerebral vessel and so apoplexy; and because the presence of diseased radial arteries renders it probable that the coronary arteries are also diseased, and hence the heart muscle itself ill-nourished. Fatal syncope is peculiarly liable to occur in those whose coronary arteries are rigid, and have undergone calcification.

Besides this form of heart failure from diseased vessels, we have to consider the effects of other kinds of degeneration of the cardiac muscle.

Fatty degeneration of the heart is evidenced by slow feeble pulse, weak or scarcely palpable cardiac impulse, and signs of general tissue relaxation. The heart is certainly, when in this condition, in the most dangerous state as far as anæsthetics are concerned. Syncope, probably fatal, will be peculiarly liable to occur, and so if the condition is at all advanced, any anæsthetic may give the *coup de grace.* Were it obligatory to anæsthetise such a subject the choice should fall upon nitrous oxide, with ether, but even with this mixture the very utmost caution should be used, and the greatest vigilance be adopted in watching the heart's action, the colour of the lips, finger nails and ears. At the first sign of heart failure inversion should be employed, and the usual measures practised to provoke renewal of cardiac action.

Lardaceous and fibrotic changes affecting the myocardium need not delay us except that it may be mentioned that these states are commonly associated with fatty changes.

In connexion with degeneration of the heart muscle and disease of the coronary arteries, we may consider Angina Pectoris. Probably in most cases of true cardiac angina, calcification of the vessels has occurred, and so the remarks made above will apply to that condition. As far as the question of giving nitrous oxide gas goes, it can only be said that although the excitement and dread of the inhalation may provoke angina and even syncope there is also a great fear that any severe pain will have a like effect. Inhalation is not without danger in severe cases, and must only be employed after careful consideration of the individual case.

Summing up we may place the affections of the heart, pericardium, and vessels, which are more or less dangerous in the following order.

Fatty degeneration of the heart if advanced is distinctly the most dangerous.

When the heart is enfeebled whether from simple anæmia, ill development, disease or structural defect, syncope should be apprehended.

Advanced arterial degeneration probably means diseased coronary arteries, and hence great danger of syncope is present.

Other conditions may be dangerous in individual cases and need careful examination and acumen in deciding a prognosis, but nitrous oxide, as such, does not act antipathetically to them.

(*To be continued.*)

CHEOPLASTIC WORK.*

A Method of Making Base Plates of Fusible Metal Alloys.

By I. Renshaw, L.D.S., Rochdale.

Gentlemen,—It very often happens to the dental surgeon, in making dentures for edentulous mouths, that considerable difficulty arises in obtaining sufficient steadiness in the lower denture, if made of vulcanite, owing to the great amount of absorption of the alveolar process which has taken place, reducing the gums to a condition approaching to flatness. Patients with mouths such as I have described, often complain of so much movement in the lower denture, when attempts are made either to speak or masticate, that with the effort to keep it in position, the upper denture is tilted and the whole arrangement misplaced.

A ready way out of this difficulty is by the application of springs; but even the use of springs does not often mend matters, for unless the swivels are very accurately adjusted, in a few mouths the lower denture protrudes beyond the upper, or there is a lateral movement, especially if one spring begins to wear more than the other. When, however, a fair amount of suction can be obtained for retaining the upper plate in position, the difficulty of keeping the lower one in place may, to a great extent, be overcome by adopting the Cheoplastic Method.

This method is by no means new as an alloy was patented by Mr. A. A. Blandy, of London, in 1856, and it was then used for both upper and lower dentures; and very likely would have been generally adopted but for the introduction, about that time, of vulcanised India Rubber. Popular favour was, however, on the side of Rubber which, coupled with the difficulty of obtaining Mr. Blandy's metal, led to its disuse.

The special advantages of this kind of work are weight, durability, and cleanliness; it does not oxidize, takes and retains a good polish, and can be repaired as easy as vulcanite.

There are several methods of making the alloys; but as the formulas are proprietary, they cannot all be given. Mr.

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* A Paper read before the Odontological Society of Manchester.

Blandy's formula was known to contain silver, bismuth, and a trace of antimony, but the proportions are unknown. Dr. Norman Kingsley, of New York, used an alloy of pure tin 16 parts, bismuth 1 part, for lower dentures only, with very satisfactory results.

Professor Chas. J. Essig publishes in his work on Dental Metallurgy, a formula for an alloy for upper and lower dentures, viz., pure tin 20 parts, gold 1 part, silver 2 parts. It is presumed that the noble metals are first melted, and the base metal added, care being taken to prevent oxidization of the latter.

I have used an alloy of three parts pure tin, and 1 part silver ; but there has been a slight tendency to discoloration after having been in the mouth some time, due, I am led to think, to the imperfect amalgamation of the metals at the time of first melting, as the discolouration was a little speckled and streaky.

I have also used Weston's White Metal for the last 15 years with *unvarying* results. With respect to lower dentures I cannot speak with the same satisfaction as to upper cases, for on pressure they are bound to press out of shape.

The alloy can be used either for full lowers, or cases where molars and bicuspids are only required ; but would require strengthening behind the front teeth with dental alloy or platina wire.

In preparing a lower denture on this method, exactly the same plan of working is adopted as for vulcanite work, plate vulcanite, or diatoric teeth, or even mineral gum sections, may be used.

When the teeth have been mounted in wax, and the bite accurately ascertained and adjusted, the wax denture (exactly as for vulcanite) must be carefully removed from the model and invested in a mixture of three parts plaster of paris and one of whiting, and then placed in a flask specially adapted for this work. The latter should be three parts plaster to the one of whiting.

The flask should be an open one, having no bottom or lid, in fact, like an ordinary casting box, and standing on feet an inch long. The wax plate is now invested in one half of the flask, leaving the teeth exposed, when sufficiently set, the other part of the flask may be put on and filled up, and when ready, remove the wax in the usual way. It will be necessary to cut a deep gutter in the plaster, extending from the posterior portion of the mould, to the opening at the back of the flask. Transverse channels must also be cut, extending from one side of the mould to the other (I mean from the lingual side right to lingual side left), so that the metal will easily flow to all parts of the mould. Care must be taken not to disturb the teeth, and also to remove all particles of loose plaster. Both halves of the flask are then bolted together and put into an oven, so that the moisture may be driven off. In order to ascertain when the plaster is perfectly dry, the flask should be taken out of the oven from time to time and a mirror held over the pouring hole. If not sufficiently dry, steam will cloud the glass. This test is repeated until steam ceases to cloud the glass, else, if the metal is poured before the mould is quite dry it will not run properly, and will be full of bubbles, and the work will have to be done over again. When the mould is perfectly dry, melt the alloy in a ladle, and pour into the flask, which must be standing on end, when sufficiently cool immerse in warm water to soften the investment. The reason why whiting is substituted instead of pumice in mixing the investment, is, that by immersing the flask in water after pouring the metal it is more readily softened and disintegrated, and the work removed without much cutting or knocking, consequently the teeth are not liable to fracture.

On removing the work from the flask, it will require filing and polishing which can be done just as you would finish a vulcanite plate. The filings and cuttings can be remelted and utilised afresh.

If necessary the labial surface can be roughened, waxed up and surfaced with vulcanite, if the white appearance of the metal is an objection.

Should a tooth require re-placing, dove-tails may be filed, and the case invested as originally done and new metal run in, but a readier method is, to vulcanise the tooth on in the ordinary way.

Sometimes a little difficulty is experienced through the metal running through the joints of the flask as fast as the metal is poured; as a precaution against this, it is always wise to cover the joints with a batter of whiting, when this annoying difficulty will be entirely overcome.

I think after a fair trial, the work will commend itself to those who carefully carry out the instructions here given.

IMPLANTATION OF TEETH.

By George Cunningham, B.A., D.M.D., L.D.S.

(*Continued from page* 106.)

Rationale of the Process of Repair.

The amount of positive knowledge which serves to throw light upon the exact method by which implanted teeth are retained in their sockets is so very small that we must be careful to abstain from drawing any premature and dogmatic conclusions as to the process, or even processes of repair, for, since it has been ascertained that both "dead" and "live" teeth are retained in artificial sockets, the mode of retention need not necessarily be the same in both cases. An important factor in considering this question would undoubtedly be the persistent vitality of pericemental life; but, as already shown in discussing this theory of Dr. Younger's, it may be dismissed since it is not based upon satisfactory scientific data.

In support of my attitude on this question I am able to quote the important evidence of Professor Miller of Berlin, who, at the meeting of the American Dental Society of Europe in 1887, expressed himself as follows:—"Younger uses for the purpose of implanting, not unfrequently, teeth which have been for days, months, or even years out of the mouth, and believes that the pericementum of such teeth becomes revitalized, so to speak, when they are planted in living tissue. In this, I think, there can be no doubt that Younger is entirely in error. When a tooth has been out of the mouth so long that the pericementum has become completely dry, there can be little hope of restoring it to life again."

I think, then, we are justified in the conclusion that the pericementum, so far as vitality is concerned, has no special characteristics which differentiate it from any other connective tissue of the body, and it is therefore extremely improbable if not quite impossible that it should possess this so-called property of inherent vitality.

As however Dr. Younger's theory is receiving some considerable acceptance in America, even, we are told, by some whose names are familiar as noted microscopists, it may not be out of place to call attention to the fact that a belief in this theory is not at all essential to an explanation of the undoubted fact that the dry teeth, as inserted in this operation of implantation, do become perfectly firm in the mouth and are retained there for a very considerable time.

Mitscherlich, in an excellent and exhaustive paper on the "Replantation and Transplantation of Teeth," published in Langenbeck's "Archiv. for Chirurgie," Vol. IV., translated into English in Truman's "Archives of Dentistry," Vol. I., p. 169, after describing the results of transplanting dead or rather dried teeth from the corpse into the living subject, records the results of some experiments on animals which satisfactorily explains the mode of retention of such teeth. He took an upper incisor from a dog's skull, and after extraction of a corresponding tooth, pressed the tooth extracted into its place, fixing it by means of a silver wire passed through a hole in the tooth and the alveolar process. After six weeks the dog was killed, having been given during the last few days three grains of picronitrate of potash three times a day; the carotids were immediately injected. The muscles like the gums, were coloured yellow; neither, however, in the implanted tooth nor in the sound ones was any alteration in colour perceptible. After removal of the silver wire the tooth was quite firmly seated, and could not be moved in the least by the fingers. The gums, as in the remaining teeth, were accurately applied both to the alveolar process and also to the tooth itself, and nowhere could any alteration be found in it. On longitudinal section the tooth was found everywhere most intimately connected with the surrounding parts, and suppuration showed itself nowhere. None of the injection had been forced into the pulp cavity, which presented no trace of the pulp beyond a little detritus. Of the periosteum there were only in a few places some small remains discoverable. On the posterior surface of the tooth two small cavities were visible, the larger of which lay more towards the point of the fang and extended to the pulp cavity; they were filled with a soft substance and their walls appeared roundish. These appearances were entirely confirmed by microscopical examination, inasmuch as only in a few places, especially on the anterior surface of the tooth, were traces of periosteum to be demonstrated; where this was absent the tooth was eaten away, and its absorption had proceeded in such a manner that a multitude of globular elements appeared on the section, resembling the fragments which we find in ivory pegs which have been bored into bones and retained in them a considerable time. In the two above-mentioned cavities the absorption had proceeded further and further, and had at last attained its above-mentioned extent. The cementum could still be demonstrated in certain places ; it was, however, absorbed in the greatest part of its extent. In the cavities of the tooth substance, masses of bone were embedded ; they were applied to the walls of the cavities without any kind of intermediate substance, and so held the tooth with such extraordinary firmness. This osseous deposit, which was directly connected with the alveolar processes, was freely traversed by blood vessels which sometimes extended themselves close up to the tooth substance. It was also so fully developed that the process had to be looked upon as fully accomplished, and therefore a later exfoliation of the tooth was not to be expected.

Certain experiments by Prof. Miller, though initiated for an entirely different purpose, serve to throw some light upon this very important subject. At the meeting of the American Dental Society of Europe before referred to, he remarks : "I have found by experiments on rabbits that the pieces of dead dentine may be retained and firmly held in living tissue by encapsulation. Small pieces brought under the skin or into the abdominal cavity *under aseptic* conditions soon became enclosed and firmly held in a dense capsule of connective tissue, and could not be removed without tearing the tissue. In all cases, however, resorption soon began forming irregular resorption-territories or cavities into which the tissue grew, thus forming another temporary bond of attachment between the dentine and the surrounding tissue. In one case, where the piece of dentine was left for 24 hours in putrid saliva, suppuration took place and the piece was thrown off.

"When pieces of dentine having living pericementum were used, an apparently permanent union with the surrounding tissue was formed, no resorption being evident after three months. I see no physiological reason why the implantation of teeth—where the alveolar process has been sufficiently preserved to enable one to obtain a normally deep socket for the tooth—should not show nearly as large a percentage of successes as transplantation. The operation should always be performed under antiseptic conditions, and, as far as possible freshly extracted teeth should be made use of."*

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*Dental Record, Nov. 1887.

In the *Oesterreichisch-Ungarische Vierteljahrsshrift fur Zahnheilkunde*, Heft i., ii., iii., 1886, is an account of a long series of experiments made by Lèon Fredel in replantation and transplantation of teeth in dogs. It appears from these experiments to be proved that the cavities of absorption only occur in teeth where they are unprotected by pericementum, and that the presence of pericementum is absolutely necessary for the formation of a firm and permanent union. It must be noted, however, that in these experiments the pericementum referred to is that of a freshly extracted tooth, and not one which has been "resuscitated" after a long sojourn out of the mouth.

The interesting and valuable experiments in replantation and transplantation of human teeth, made by Professor Stack, Dr. Baker, and Mr. Daniel Corbett, junr., are well worth careful study by those interested in the subject. The able paper* by Professor Stack clearly shows the real reason of failure in these operations, and further, the possibility of a reunion of the pulp with the tissues outside the tooth, a fact which may yet be of the utmost value in the operation of implantation.

These papers are of such scientific interest that I propose to refer further to them in a second paper, in which I intend to discuss experiments performed on animals with the special purpose of demonstrating the actual mode of union of implanted teeth.

The results of microscopical examination of human implanted teeth after removal furnish certain important, but not altogether satisfactory, data.

Case I. Andrew's Implanted Tooth.—"At a special clinic of the First District Society (N.Y., U.S.A.) held on October 15th, 1886, Dr. W. J. Younger, implanted an inferior central incisor in the mouth of Dr. C. L. Andrews. This tooth has since been under continued observation by the chairman of your committee. It became very firm soon after being inserted, and changed its colour to conform to the other teeth, as they all do. It was a typical case of success and we have seen many experts deceived in picking out the implanted tooth. Dr. Andrews, a dentist himself, felt quite proud of the result, and everything pointed to a long-continued usefulness of the new member of his inferior maxilla. But about

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* Trans. of the Academy of Medicine in Ireland, 1883.

September, 1887, he first noticed that the tooth was getting a little loose. This he attributed to an injury received in eating corn, and ligatured it and gave it every other attention ; but it grew from bad to worse until, on February 21st, your chairman extracted the tooth and immediately placed it in a weak solution of chromic acid. It was at once taken to the laboratory of Professor Carl Heitzman, and left with him for microscopical examination for the benefit of the report of this committee. Professor Heitzman gave the specimen his careful attention, and returned to us four of the best sections, and india ink drawings of two of them ready for publication.

His report of the specimens is as follows :*

"New York, April 8th, 1888.

"The root of the implanted tooth which you brought for examination a few weeks ago appeared to the naked eye reduced to about one-third of its original size. This reduction was caused by deep erosions and irregular cavities that have replaced the original tooth tissues, viz., the cementum and the dentine.

"After the tooth had been softened in a chromic acid solution, the root was cut into thin slabs, and the appearances under the microscope, were as follows : The dentine is corroded almost around the whole periphery of the root. Only in one place can a trace of cementum be seen. The bordering line of the dentine towards the excavations is fluted and made up of crescentic lines corresponding to bay-like excavations, which follow in varying sizes in large numbers. The dentinal canaliculi, in which the dentinal fibres are still recognisable, terminate abruptly along the concave borders of the bays. Here and there apparently closed spaces of varying sizes are seen at the eroded borders of the dentine. Both the small and large bays and the spaces are filled with a myxomatous granulation tissue, in which numerous partly wide capillary blood-vessels run, mostly filled with blood corpuscles. In places where the bays are shallow a delicate layer of fibrous connective tissue is seen attached to the dentine. The myxomatous tissue holds in many places globular masses of lime deposits ; and in some places are seen débris of dentinal tissues, with irregular, eroded contours still holding dentinal canaliculi and obviously having escaped dissolution. Along one surface the bays appeared to be filled with coagulated serum of blood, in which blood-corpuscles and isolated medullary corpuscles were suspended; here evidently hæmorrhage had taken place immediately before the removal of the tooth, that led to the destruction of the granulation tissue. The pulp chamber is lined mostly by primary dentine; a small portion, however, shows the formation of secondary dentine of the ordinary variety, with scanty and irregular canaliculi. Both the primary and secondary dentine border the pulp chamber with globular masses pierced by dentinal canaliculi, but showing nowhere excavations like those at the periphery of the root. Towards the apex of the root, where the corrosion of the dentine is most conspicuous, the pulp chamber has disappeared and the dentine is eaten away to such an extent that only thin ledges of it are seen. The process that has led to such an advanced destruction of the root is the same as that which brings about the absorption and destruction of the roots of temporary teeth before shedding.

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* *Chicago Dental Review*, June 15th, 1888.

(Signed) DR. C. HEITZMAN."

(*To be Concluded.*)

Reflections from the Surgery.

REPLANTATION—A CASE.

BY H. R. NEEPER, D.D.S., Bethany, Mo.

H. N., aged 17, on the—day of October, 1887, was struck in the mouth with a base ball. On examination, shortly after the accident, found the superior and inferior incisors loose, and the process over the superior incisors badly fractured; could feel the crepitation on both the labial and palatal aspects; the left central was entirely detached and was left on the ball-ground; the left lateral was so badly broken that it was afterwards crowned; the mesial corner of the right central was broken off, as were the upper thirds of the lower left central and lateral incisors; the surrounding soft parts were badly contused. Sent for the missing central, which was found on the ground at the scene of the accident, and, as it appeared intact, washed it and the socket with a tepid solution of one per cent. carbolic acid and replanted it. Bathed the soft parts with dilute Listerine, and applied a gutta-percha splint to hold the tooth in position. As a patient with a large gold filling, about half completed, was waiting, I did not remove the pulp from the tooth to be implanted, although that seemed to be the proper course to pursue. The case progressed favorably, and healed by first intention. As soon as practicable—in about two months' time—began the necessary restorations, which consisted of crowning the superior left lateral, contouring the right central, and building up the broken lower incisors. The crown of the replanted tooth looking a little darker than normal, I concluded the time had come to remove the dead pulp; opening on the palatal surface, the tooth seemed rather sensitive, and as the drill entered the pulp chamber, the patient winced and complained of the pain. Expected to find a broken down pulp, and after withdrawing the drill, found no indications of it, and no odour. A barbed broach removed an organized tissue, looking like encapsulated albumen, which was followed by very slight hœmorrhage, and attended by considerable pain.

I have no theory to advance as an explanation of the case, or why the pulp of the replanted tooth was not broken down. That there was living tissue, was evidenced by the pain attendant on entering the pulp chamber and removing the contents. The tooth was treated with a dressing of carbolic acid, and in a day or two was filled with gutta-percha. At this date, December 26, 1888, the tooth is apparently all right.

Not having seen a similar case reported is my excuse for bringing this one before the profession.—Reprinted from *Archives of Dentistry*.

ANÆSTHETISTS AT THE "GUYS' DENTAL SCHOOL." In order to provide efficiently for the administration of anæsthetics in the Dental School at Guy's Hospital, it has been decided to appoint an anæsthetist for each morning of the week, instead of only one anæsthetist to the Dental School as hitherto advertised. Applications accompanied with testimonials should be sent to the clerk, to the Governors of Guy's Hospital, on or before March 25th.

British Journal of Dental Science.

LONDON, MARCH 1st, 1889.

COLLECTIVE RESEARCH.

In the columns of the *British Journal of Dental Science* for last year we placed on record an earnest appeal for collective Investigation of dental diseases. We observe that Mr. William Hern in speaking from the chair at a recent meeting urged upon his hearers the importance of our contention. We are so convinced of the importance and utility of this mode of research that we are impelled to reopen the subject and again indicate to our readers the lines in which the work might be advantageously pursued. In the first place on account of the very limited portion of the anatomy upon which dentists are engaged, they have many more opportunities of watching the inception, development and maturation of pathological processes than has either the surgeon, or the physician. The whole field of their labours is, as it were focussed well within their daily observation, a fact which enables them to observe for themselves, and not to depend upon the record of the subjective symptoms offered by their patients. Again, the morbid processes connected with the teeth and their contiguous structures are sufficiently chronic, and in most cases *evident*, as to lend themselves to investigation by those who have not received a very technical instruction in research work.

With the resources at hand which modern developments in histology, in bacteriology, and practical pathology furnish the student, we ought to be able to make the dark places of dental pathology light, and its most obscure corners plain as day.

By collective investigation of disease as carried out in England, Ireland and Scotland by the British Medical Association, is understood, that an executive formulates a number of questions upon some one disease, or, it may be, a group of allied affections. The card containing these questions is sent to every member of the Association, and all, who are willing, fill up the records of any cases of the particular kind under investigation, and send the details to the organising secretaries. When all the cards are collected, these functionaries sift, tabulate, and found conclusions from the mass of evidence thus collected and then issue a report, incorporating the results of their labours, which is published. If this system were applied to dentistry, and if the record of all the cases of pyorrhœa alveolaris, symptoms, etiology, and treatment were fully gone into, surely some more accurate idea of the pathology of that affection could be arrived at than is at present prevalent among our teachers. Were even the different teaching schools of the United Kingdom to take up collective investigations, setting reliable senior students to collect materials, while a committee of the staff collated and submitted to a central committee representing all the district committee, what an advance we might look for, and, we submit, fairly anticipate.

THE USE OF STUDENTS' SOCIETIES.

In the Annual Report of the Council of the Students' Society of the London Dental Hospital occurs a passage which is worthy of passing comment:—" Not the least pleasing occurrence during the past year has been the interchange of Transactions, &c., with the Students' Society of the New York College of Dentistry, which has been accompanied by the transmission, on our part, of good wishes for the success of their Society." This is indeed a matter of satisfaction, not only to the Societies immediately interested, but, we venture to assert, to the whole profession. For are we not all interested in putting down that latest development of Charlatanism, which covers itself under the cloak of so-called American Dentistry? And the surest means of compassing this end, is by cementing yet more closely the union of English dentists with their American confrères, and thus proving to the great British public, and the world at large, that we are all members of one body, without distinction of country or of race. It must be borne in mind that these, and kindred Students' Societies, are "the coming race." From out of their midst will rise those, who when our present leaders are compelled by the inexorable hand of fate to relinquish their rule, will receive the mantle thrown from their shoulders, and will, as we fondly hope, continue to lead the profession onward and ever onward.

These Students' Societies are an immense power for good. Their meetings are the training ground for the rising generation of dentists; here they practice the art of discussion, they learn to arrange their ideas clearly in their own minds, and acquire the power of expressing themselves so as to convey these ideas as clearly to the minds of others. Here too they learn that most difficult of all lessons to young and ardent minds, the necessity of restraint and the observance of rules and customs. We consider these Debating Societies to be of incalculable service to our young Students, and as such deserving of all support and encouragement. It is therefore, with great pleasure that we learn from their Annual Report that the Students' Society of the Dental Hospital of London is in such a prosperous and healthy state. This Society claims to be the oldest of Dental Students whether at home or abroad, having been established since 1863, and is as far as we are aware the only Students' Society of any kind in England, with the exception of the Abernethian Society, which publishes its own Transactions. Such being the case, we are glad to learn that it acts up to its high position, by extending the hand of good-fellowship and friendship to all similar Societies. We heartily congratulate the Society on their satisfactory condition, and wish them continued prosperity in the future.

The Discussion upon "Dental Advertising," has, on account of the great pressure upon our space, been postponed. We are always most willing to give fair play to both sides in every controversy, but are only too often obliged to suppress letters on account of their great length, or because the writers allow themselves to include gross personalities, which while failing to support their contentions, render their publication simply impossible in a country where laws for libels are in force. We would suggest that our correspondents should cultivate terseness of expression, and learn to avoid the tendency to vituperate those who do not agree with their opinions.

An excellent cement for iron or stone can be made by mixing glycerine and litharge; it hardens rapidly and is very good for mending broken casts and models.

A Dental Hospital for Dublin.—Mr. Henry Sewill, who seems to be an out and out follower of Mr. Newland-Pedley's views anent Dental Departments in General Hospitals, writes to a medical contemporary urging that it would be far more expedient alike for students, patients, and the cause of science, if Dublin would set about making a really efficient Dental Department in its General Hospitals. "At the date of the inception of the measures which culminated in the Dentists' Act of 1878, it was necessary to organise a separate dental hospital and school in London, and the Dental Hospital of London is one of the very few special hospitals, the reasons for the existence of which can be from beginning to end fully justified. The state of things prevailing thirty years ago has he thinks no parallel now, and there is no more call for dental hospitals, than for throat, ear, or skin hospitals. The proper place for the treatment of these cases is the out-patient department of general hospitals, where the expense is less, and where association with a great institution prevents occurrence of abuses to which most special hospitals are subject." It will perhaps be startling to such men as Mr. Jonathan Hutchinson, Sir William Bowman, Sir William Dalby and the members of the staff of Moorfields, the Stamford Street Hospital, and indeed, the many really high class special Hospitals, that special hospitals are one and all to be pronounced superfluous if not harmful!

Elevation of the Epiglottis an aid to Artificial Respiration.—According to Professor Bergmann, while his assistants execute rapidly the movements necessary for artificial respiration, he introduces his finger into the mouth and holds up the epiglottis. He claims that this structure will often close down firmly and that manipulations are of no use unless one operates in this manner. We suppose the Professor would not claim any novelty for this manœuvre, it has certainly been familiar to the profession in England for many years, and commonly practised, but by the simple means of dragging the tongue out of the mouth. The Epiglottis will thus be drawn away from the glottis.

A Dental Section of the British Medical Association.—Mr. J. M. Ackland, of Exeter, writes proposing that there should be a Dental Section of the British Medical Association. There are many members of the British Medical Association practising dental surgery, several of whom have mentioned the subject, he asks the opinion of those older and better versed in "dental politics" than himself as to the advisability of such a step. At the Glasgow meeting of the British Dental Association in 1887, the subject was mentioned by the Lord Provost of the city, and by Dr. Arthur Mecan, but the matter seems to have dropped. There is a "Dental and Oral" Section at our International Medical Congresses, and surely there can be no reason, why a permanent section should not be maintained amongst the many dental members of the British Medical Association at its annual meetings.

There are obvious objections to such a section being formed under the present condition of things. For if such a section were instituted of course only M.R.C.S.,L.D.S. men could take part in it, and so we should make the breach wider between the "L.D.S.'s" only, and the Surgeons practising dentistry. While we are all aiming at a closer union between dentists, for in union is strength, it seems a pity to suggest any step which, if acted upon, must divorce one set of dentists from another.

Manipulative Miscellany.

All new instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being, to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

HYDRO-NAPHTHOL.

Seabury & Johnson.

It is claimed for this drug that it is non-poisonous, non-irritant, non-corrosive and odourless. Such an article should prove very valuable in dental practice. Over Carbolic acid it possesses the advantage not only of being odourless but also of superior germicidal power. Hydro-naphthol, being twelve times more powerful in this direction than Carbolic acid.

As a mouth-wash it has not such an objectionable taste as the Perchloride of Mercury, while it is found very efficacious.

The drug can be obtained solid or in solution; our experiments have been conducted chiefly with the alcoholic solution supplied by the firm.

A wide range of usefulness will always be a strong recommendation to any drug, and hydro-naphthol owning non-irritant and non-poisonous qualities may also be combined with other medicaments to great advantage.

Abstracts of British & Foreign Journals.

ARCHIVES OF DENTISTRY.

TEMPERING INSTRUMENTS.

By Sol. Horine.

To repoint and temper excavators it is recommended that they should be heated to a "cherry red," not more, and hammered until cold; reheating and hammering until properly shaped. Then place near the top of a cup a board half the width of the cup and fill with cold water the length of the hatchet or hoe-blade of the excavator above the board. In tempering, heat only hot enough to give it the right temper without drawing, by allowing the heat of the handle to bring to the shape desired, stick it on the wood and hold until nearly cold, then plunge to the bottom. The shank will be a spring, while the blade will chip untempered steel. Instruments should never be heated so as to draw down; cherry red is about the colour, unless wanted extra hard. By hammering at a cherry red, the crystals formed by molecules, become elongated and lap past each other, and in proportion to their length does the steel have strength; and as it is heated above a cherry red, the crystals reform and become shorter—consequently, brittler. Burs should be tempered the same way, only harder. Grind excavators on a fine stone instead of whetting.

Literary Notices and Selections.

THE SUPPRESSION AND SPECIALISATION OF TEETH.

By John Humphreys, L.D.S.I.,
Lecturer on Dental Anatomy and Physiology, Queen's College Birmingham.

(*Continued from page* 118.)

The molar series of the horse are: premolars $\frac{3-3}{3-3}$, molars $\frac{3-3}{3-3}$, the first premolars being suppressed in both jaws.

But hipparion and palæotherium possessed the missing premolar, and they evidence its gradual diminution in size.

Sometimes the first premolar is present as a small conical tooth in the horse, quite unlike the well-developed premolars, and styled by veterinary surgeons the wolf-tooth; it is, however, very quickly lost.

It is interesting to observe the gradation in shape and size, from the large premolar in palæotherium, through the still smaller in hipparion, to the minute, functionless tooth in the horse. (The description of the last form has been given above.)

In tapir the first lower premolars are wanting.

In dinotherium they were reduced in both jaws to the third and fourth, which, like those of the horse, were valuable, masticating teeth.

In ruminants the first premolar is never developed; though the germ is produced in the fœtus, it is soon absorbed, leaving the molar series $\frac{3-3}{3-3}$.

In the llama and vicugna it is erupted, but soon shed, the second speedily following, while the third is a small, functionless tooth, evidently in course of suppression, leaving the adult animal possessed of only one, the fourth premolar.

The camel, and dromedary possess the first three premolars but a short period, as they are small, conical teeth, and are soon shed, the fourth alone persisting.

We notice in ruminants the gradation in suppression from $\frac{4-4}{4-4}$ in extinct dorcatherium to $\frac{3-3}{3-3}$ in sheep and oxen, which are useful grinding teeth; while a still further diminution exists in vicugna, where the first and second are suppressed, the third is rudimentary, the fourth being in service as a grinder.

The loss of premolars in rodents is clearly shown by arranging in tabulated form. We find the greater number possessed by the genus Lepus, who have three above and two below; Pika and Lagomys, $\frac{2-2}{2-2}$; Sciurus, $\frac{2-2}{1-1}$; Echimyidæ, $\frac{1-1}{1-1}$; Muridæ and Hydromys, $\frac{0-0}{0-0}$.

Hare	$\frac{3-3}{3-2}$.	Porcupine	$\frac{1-1}{1-1}$.
Pika	$\frac{2-2}{2-2}$.	Rat	$\frac{0-0}{0-0}$.
Squirrel... ...	$\frac{2-2}{1-1}$.		

The very minute first upper premolars of the squirrel point most eloquently to a very speedy suppression of a tooth which is absolutely functionless.

The Carnivora exhibit the most interesting instance, of their variability :—In the majority of cases there is no antagonism between the teeth in both jaws, contact being effected only in the hinder teeth. In the dog and fox, the three upper premolars, and four lower premolars are not in contact, but separated by a considerable space, their office evidently being to coarsely divide the food and to pass it backwards to the molar teeth for grinding. But in the lycaon the whole of the premolar series interlock, the points of the upper teeth fitting into the spaces between the lower, giving to the creature a most powerful bite, and the same thing may be observed with *Cynogale Bennettii.*

The Canidæ approach more nearly than other Carnivora to the supposed mammalian archetype, the dental formula being incisors $\frac{3-3}{3-3}$. canines $\frac{1-1}{1-1}$, premolars $\frac{4-4}{4-4}$, molars $\frac{2-2}{3-3}$.

The gradation in form from the conical type and the complexity of pattern is exceedingly well seen in the teeth of the dog.

The first premolars are small, subcompressed cones, having no deciduous predecessors, the teeth in the lower jaw being much smaller than the upper, and evidently in a state of suppression.

In long-muzzled varieties, as the greyhound, there are considerable intervals between the teeth, but in short-muzzled breeds, as the bulldog and pug, the premolars are much crowded together, causing them to rotate upon their axes, standing in a transverse fashion across the jaws ; this is almost invariably the case with the third tooth.

Professor Windle and I examined the whole of the dogs' skulls in the Royal College of Surgeons Museum, also those in the Natural History Museum at South Kensington,* together with a large number in our own possession, but we found very few instances of suppression of the premolar teeth, the effect of the crowding in dogs with short jaws appearing to be to cause them to rotate rather than to disappear.

In Felidæ we find a further diminution in number.

In the upper jaw of the cat the first tooth is quite suppressed, the second is very minute, almost rudimentary in form, and serving no purpose apparently, the whole of the mastication falling to the lot of the third and fourth, which are powerful sectorial teeth.

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* For the opportunity of examining these we are indebted to Professor Stewart and Mr. Oldfield Thomas respectively.

In the lower jaw only two remain, the first and second having entirely disappeared, leaving a wide diastoma separating them from the canines.

In the otter (*Lutra vulgăris*), the first tooth is very minute in the upper jaw, and has disappeared in the lower, leaving its formula $\frac{4-4}{3-3}$, while in Mustelidæ, stoats, weasels, &c., the first pair in both jaws are wanting. $\frac{3-3}{3-3}$.

In the bear (*Ursus*), the premolars are very small and stunted, the fourth being the largest, and remaining throughout life, but the anterior three are early lost, though the first very strangely persists for many years.

In the lower jaw of the badger (*Melestaxus*), the first premolar exists only for a short while as a tiny, functionless tooth, it is quite wanting in the upper, and in the adult the series reads thus, $\frac{3-3}{3-3}$.

The articulation of the premolars in the otter and badger is tolerably close, approaching the lycaon type.

In the extinct machairodus (Tertiary), the suppression attained its maximum, its premolars being represented by two above and two below, the first pair in both jaws having disappeared. Consultation with the table on the Carnivora, will probably express significantly the diminution which has taken place throughout the different groups :—

The Insectivora present varieties in number.

In the mole	$\frac{4-4}{4-4}$.
„ hedgehog	$\frac{4-4}{2-2}$.
„ glisorex	$\frac{3-3}{3-3}$.
„ echinops	$\frac{2-2}{2-2}$.
„ chrysochlora	$\frac{1-1}{2-2}$.

Cheiroptera also vary somewhat from the common bat, (*Vespertilio murinus*), $\frac{3}{3}$, to the vampire (*Desmodus*), $\frac{2}{3}$.

The fruit bat (*Pteropus medius*), presents one of the most striking illustrations of premolar teeth in a state of suppression. In the upper jaw there are apparently four molars, consisting of the fourth premolar and three molars. But in some skulls a careful examination will reveal a minute tooth between the canine and premolar, so small as almost to escape detection. In the lower jaw the first premolar is stunted, and is much smaller than its fellows.

In the group Lemuridæ are two aberrant forms, galeoyithecus and cheiromys, the former possessing premolars $\frac{2-2}{2-2}$; and the latter, represented by the aye-aye, is entirely devoid of premolars in the lower jaw, and has one small tooth in front of the molar series in the upper.

In Primates, the New World monkeys (*Platorrhyna*) possess a premolar formula $\frac{3}{3}$, while the higher apes, and man, have lost the two first pairs, only the third and fourth remaining, $\frac{2}{2}$.

Supernumerary premolars are very rare in man. I have only two casts illustrating an additional tooth.

(*To be concluded.*)

Reports of Societies.

THE MANCHESTER ODONTOLOGICAL SOCIETY.

A MEETING of the above society was held at the Grand Hotel, Aytoun street, on Tuesday evening, the 5th of February.

Mr. LEOPOLD DRESCHFELD, L.D.S., the President in the chair.

The minutes of the previous meeting were read and confirmed.

Mr. Chas. H. SMALE, L.D.S., Eng., 118, Oxford Street, Manchester, was balloted for and elected a member of the Society.

THE PRESIDENT made a few remarks in the course of which he pointed out that the present was the fourth year of the Society's existence, and during that time they had worked pretty hard, and it was to their credit that they had advanced so far. Fortunately they had a very good Secretary. (Hear, hear). He might almost say two, but it was owing the indefatigable efforts of one of these in particular, that their meetings would be reported every month in the "*British Journal of Dental Science*," and in view of that fact he asked the members to make their remarks as short as possible so that they could be reported. He hoped, that all would bring good papers.

Mr. I. Renshaw handed round an upper model of the mouth of a boy, aged 14, showing the left canine protruding exactly through the centre of the palate.

Mr. H. Wood showed a right angle attachment bur, which he had cut to form a quadrilateral rimer. This he found of great service in the initial opening of fissure cavities.

Mr. Geo. Campion exhibited three models, two showing supernumerary teeth.

(i.) A conical peg shaped supernumerary situated between the upper central incisors.

(ii.) A perfectly formed extra lower incisor.

(iii.) An arrangement of elastic and metal bands, with which he had successfully twisted and brought into place an upper lateral incisors.

Mr. Houghton then read his paper on "Cocaine."

DISCUSSION.

DR. PARSONS SHAW: May I ask how long you are injecting the cocaine, and how long after the injection do you operate?

MR. HOUGHTON: The time taken in injecting the cocaine depends upon the condition of the gums. If the tissues were dense it sometimes took a minute. I generally operate in about a minute or two afterwards. Before operating I pass a spatula up the roots of the teeth and if it passes far up without the patient feeling it the extraction would be a painless one.

DR. PARSONS SHAW: I have been in the habit when injecting cocaine to take from one to three or even four minutes. I also wait some time after the injection under the impression, perhaps an erroneous one, that the cocaine will not have its full effect.

MR. J. H. JONES: My experience with cocaine as a local anæsthetic is rather extensive. Sometimes I apply it to soft chalky dentine to allay pain in excavating for filling, but do not think it of any service when the dentine is dense. I find it extremely valuable in preventing sickness while taking an impression by painting the palate with a 20 per cent. solution, In extractions three-fourths of my cases have been successful. by which I mean there has been no pain whatever, the patient only feeling some pressure.

The unsuccessful cases had assumed various forms, such as faintness, lightheadedness, shortness of breath, palpitation of the heart, tingling sensations and hysteria; but with the exceptions of the painful extractions, which I attribute to ineffectual injecting, I have had no troublesome case for the past two years. The usual dose is half-a-grain, but have often taken out a tooth with a quarter, and even a sixth of a grain.

Mr. W. Simms. Since last discussing the subject it is evident that the members have learnt the dangerous nature of cocaine, hence it is given now only in doses of one-sixth and one-quarter of a grain. My experience so far, does not allow me to discriminate where cocaine should or should not be given, so I administer it in the hope that no ill effects will follow. Since October I have been using the tabloids, and have had only one bad case, and I believe the greater success has been owing to the use of a purer form of the drug. I agree with Mr. Houghton, that it is more easy to produce anæsthesia in the upper jaw. I dissolve the cocaine in water at about blood heat, because I think it is more readily absorbed. May I ask Mr. Houghton if he meant by sickness, actual vomiting?"

Mr. J. H. Jones. I have met with one case of vomiting.

Mr. Minshall. I have used the tabloids about eighteen months and find them most convenient. I also find the addition of a two per cent solution of carbolic acid of great value. I have several times operated immediately after the injection.

Dr. Shaw. I should like to ask another question which has been partly answered by Mr. Jones, viz :—Can more than one tooth be extracted with one injection?

Mr. Jones. I have extracted eight teeth.

Mr. Simms. I think two or three teeth can be painlessly removed, after one injection, but have not found it possible to remove seven or eight. In reference to the time to operate after injecting the cocaine, if I waited ten minutes I should expect to find the parts returned to their normal conditions, and all the pain felt.

Mr. Minshall. I have had a case where the effects had remained quite an hour after the extraction.

Mr. I. Renshaw. Mr. Simms has asked Mr. Houghton if he had ever noticed any unpleasant results after administering cocaine to children. I would like to refer to a case of a girl aged fourteen. After an extraction with cocaine the child seemed in a dazed condition for some hours and was unable to sleep the following night. The toxic effects were so distressing that I have declined to use the drug again.

MR. GEO. CAMPION. I rarely use cocaine for extraction, but where I do use it is when I have an extremely sensitive cavity to deal with. The repeated use of the drug does not appear to me to have the same effect as at first. I should like to ask Mr. Houghton if his experience is the same? In cases of simple periostitis cocaine is of extreme value. I have noticed that when cocaine has gone easily into the tissues, the results were satisfactory, but where the gums were hard and dense, I found the patient suffer sickness, headache, and went extremely pale.

THE PRESIDENT here intimated that as another paper had to be read, the discussion must now be brought to a close. As several other members wished to speak on the subject, it was decided to postpone the discussion until the next November meeting.

MR. HOUGHTON in his reply said he could not give the results of the use of tabloids. Where there was periostitis he used warm water, and cold water in simple extractions. He thought the anæsthetic effects of cocaine were local, and when frequented administered to the same patient it lost some of its effect. He agreed with Mr. Campion that disagreeable effects were sometimes felt when there was any difficulty in injecting the cocaine.

THE PRESIDENT then called upon Mr. I. Renshaw, L.D.S., Rochdale, for his paper on "Cheoplastic Work."[see page.202]

DISCUSSION.

DR. SHAW. May I ask Mr. Renshaw if he has made many lower sets like these, and if so have they been successful?

MR. J. RENSHAW. I have not had one failure out of fifty cases.

MR. SIMMS. Is the metal strong?

MR. J. RENSHAW. It will not break unless trodden upon, but if it is too thin it will bend.

MR. HEADRIDGE. I have always had great difficulty with the metal in getting an accurate fit. I think there is an advantage in the weight in some cases.

THE PRESIDENT. This is a revival of an old process, and we may now get a better result from it than formerly.

After a vote of thanks to Messrs. Houghton and Renshaw, and those gentlemen who brought casual communications the meeting terminated.

Dental News.

DENTAL HOSPITAL OF IRELAND.

The Annual Meeting of the friends and supporters of the Dental Hospital, 29, York Street, was held in the Albert Hall, Royal College of Surgeons, the president of the College of Surgeons, Dr. Henry Fitzgibbon, in the chair.

Mr. Daniel Corbett, jun, read the annual report.

The committee beg to present to the governor, subscribers, and public, their report for the year 1888. During this, the tenth year of its existence, a very large number of the poor have received aid from this institution ; and the professional staff have laboured under much difficulty in carrying out the treatment of these cases, owing to their increasing number, in the present premises. The poorer section of the public are becoming more alive to the advantages of having their teeth attended to in the earlier stages of disease, and show a greater anxiety to avail themselves of proper treatment, and to retain their teeth, than to have them indiscriminately removed. This means, of course, a much greater tax on the professional services of the staff. Under these circumstances, the latter have applied to the committee of the hospital to make an appeal to the public for funds to build suitable premises, with numerous well-lighted operating rooms, so that a larger number of cases might be treated at once. They have inspected many private houses, and cannot find any really suitable, for the purposes of a thoroughly efficient dental hospital. The committee submit that as the services of the staff are given without fee or reward, the charitable public should supplement them by building premises adapted in the best way to economise valuable time, and render this voluntary service available to to the poor to the fullest possible extent. The amount of money required for building a thoroughly efficient dental hospital is about £3,000. In order to defray this expense the committee have decided to organise a large fancy fair, to be held towards the close of the year. As the sphere of usefulness of the hospital is not confined to Dublin, but extends throughout Ireland, the committee hope to receive a general support from the country districts. The annual income of the hospital shows a considerable increase on that of 1887, while at the same time, expenses incident on the treatment of patients are larger than those of the previous year, so that there remains a small balance on the wrong side of the account. The finances have been administered with rigid economy, but the cramped state of funds, joined to the unsuitabeness of the present premises, act as a great incubus on the energy of the professional staff. The committee beg to thank cordially the donors and subscribers to the Dental Hospital, and to express the hope that each year shall see this charity, which merits universal support, engaged with a growing efficiency in a wider sphere of usefulness.

The report was adopted.

Mr. Stack read a letter from Mr. Joseph B. Pim apologising for being unable to attend, and testifiying, as auditor, to the economy with which the hospital was worked.

Mr. Corbett, in moving that the Dental Hospital deserves the support of the public, said the institution had now been in existence for ten years. In the first year 3,000 were treated, and 10,000 were treated this last year. This great increase in the number of patients proved that the poor had begun to recognise the value of the hospital, and to take advantage of the facilities it held out.

Judge Monroe, in seconding the resolution, said the Dublin School of Dentistry was one of which any nation might be proud. Their dentists were men of first-rate education, who were obliged to go through a course of ordinary surgery and attend for two years at one of the dental hospitals.

The resolution was carried.

Sir Percy Grace was moved to the second chair, and on the motion of Mr. Maurice Brooks, seconded by Dr. Kidd, a vote of thanks was passed to the College of Surgeons.

The President replied.

Lord Justice Fitzgibbon having complied with a request for a speech by a brief address.

The proceedings terminated.

VACANCY.

The Dental Hospital of London Leicester Square. The post of Assistant Dental Surgeon is vacant. Applications to be made on or before Tuesday, April 2nd, the Secretary J. Francis Pink.

APPOINTMENTS.

Messrs. J. Collins, Tippett, & Horne, Hon. Dental Surgeons to the Cottage Hospital, Newton Abbot, S. Devon.

Mr. J. Collins Tippett, Dental Surgeon, to the Mildmay Consumption Home, Bronshill Road, Torquay.

Hospital Reports.

Report of cases treated at the Royal Portsmouth, Portsea and Gosport Hospital, from January 1st to December 31st 1888.

Teeth Extracted	876
,, ,, Under Chloroform	24
Advice, Sealing, etc.	215
Irregularities of the Teeth	120

F. B. lad 12, Transposition of Superior left Central Incisor standing between and slightly above the line of Canine and Bicuspid. Two Supernumery Teeth, a conical and cubical form occupying the place of the C. Inc. The Teeth were extracted and the misplaced Incisor transplanted and kept in position with stout Regulating Rings. Gutta Percha Splint and four tailed bandage. Mouth syringed daily with Condy's fluid. Pot. Chlor. etc. Perfect union supervened in five weeks.

Total	1236

W. H. Kirton, L.D.S., R.C.S. Ireland, *Hon. Dental Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) - - 14s. od.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291 Regent Street, W. A single number sent on receipt of seven (penny) stamps.

British Journal of Dental Science.

No. 508. LONDON, MAR. 15th, 1889. Vol. XXXII.

ON THE ADAPTATION OF GOLD & RICHMOND CROWNS.*

By M. Woolf.

Mr. President and Gentlemen,

The subject of gold and Richmond crowns, about which I intend saying a few words this evening is not by any means a new one.

My reason for selecting a subject of this nature is partly due to the fact that so many good roots are sacrificed, which might with careful treatment be again made of permanent service by the method of crowning. And as in order to adopt this method, it is necessary to understand every detail of the work from beginning to end, I shall endeavour to make the *modus operandi* as clear as possible in order to show that any who are interested in this branch of dental work, and intend to make use of this method themselves, can do so with very little trouble.

An important fact to be considered is the expense one is generally put to, which consists in obtaining the instruments and the necessary appliances for this style of work.

Some of you may perhaps tell me that you have not the time to devote to the crowning system, or, that you prefer the ordinary method of pivoting with the tube, to that of the Richmond crown because it is simpler and takes less time; but I argue that if you do not make the attempt while at the Hospital it is doubtful whether you will make use of such a method in your private practice.

I think there can be no doubt in your minds with regard to the efficacy of Richmond crowns, if properly made, for perfectly protecting the root from decay whether decayed below the gum or not.

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* A paper read before the Students' Society London Dental Hospital.

The adaptation of gold crowns to otherwise worthless roots of natural teeth for the purpose of saving them for use in mastication, is an expedient which the profession is employing more and more every day, and one cannot help seeing the great advantages to be gained by it, although only within a few years has it been deemed desirable to do anything in this direction, The old method was to extract all the old roots to make way for artificial dentures.

I shall first speak of the Richmond crowns as applied to front teeth. Acting on the supposition that the tooth is dead, but perfectly healthy, we cut it down with a corundum wheel or nip it off with a pair of excising forceps in the ordinary way, grinding the root down a little below the gum on the labial surface, not being so particular with the lingual so long as allowance is made for a free bite.

The remaining portion of the tooth should now be trimmed with a small corundum wheel so that the circumference of the crown may not be larger than that of the root over which the band is to fit, * and in order to do this it will be found necessary to remove nearly every particle of enamel, which can be done by using a short, sharp, curvated scaler, bent so as to take an oblique direction along the side of the root. Although in some cases it is necessary to remove the greater part of the enamel, yet in others we need not be so particular, thus showing that the success of the operation does not depend so much upon the total removal of the enamel, as upon so perfecting the work that no sharp corners or bulges may exist, which could prevent the band slipping into its proper position.

The importance of preparing the root in the before-mentioned manner cannot be overrated, and neglect in this particular is one of the principal causes of failure, for, if the crown should be passed over the enlarged end, it must necessarily have a space beyond between it and the root which it is impossible to close. The result of this might be that this space would get filled up with decomposed blood and broken down tissue, and so cause disease, besides probably setting up inflammation.

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*This is shown in Fig I. (A) representing the tooth before anything is done to it, & (B) the root when prepared for the band.

Thus we see how necessary it is to prepare the teeth properly, taking plenty of time and exercising plenty of patience, for if the band fits well you not only help to prevent the moisture from penetrating, but on giving a few taps with the mallet succeed in driving it on tighter and tighter which of course adds greatly to its durability.

The next thing to be done is to drill out the root in the usual manner, taking care to thoroughly cleanse the canal of all debris on finishing, so that the pin when inserted may run down easily into its place.

The canal should be larger than is absolutely necessary for the admittance of the pin, having the walls slightly undercut here and there in order to afford a good hold to the cement when finally inserted.

The root is now ready for the fitting of the band, which in all cases of gold and Richmond crowns should be made to the root itself as both time and trouble are thus saved, for should the band be a little too large the defect can easily be remedied by cutting along the joint and drawing one edge slightly over the other and soldering; on the other hand, if the band were too small it could be stretched by placing on the beak of a small anvil and giving one or two light blows with a riveting hammer; but if not made to the mouth the imperfection would not be noticed until the work was completed, which means either that part of the work must be redone or the operation remain unsatisfactory.

Should your own, or your patient's time not permit of the lengthy stay necessary to complete the more important part of the operation, the difficulty may be overcome by taking an impression with the band and the pin in position upon the root, so that on pouring with either equal parts of sand and plaster, or marble dust and plaster, you have a very fair model to work and solder to, the pin and band having been firmly fixed in the plaster or Stents impression before pouring.

Having lighted a small Bunsen's burner and got the borax and instruments ready, which should comprise a pair of half round pliers for bending up the band, a pair of common fine-tweezers for holding it in the flame for soldering, a pair of fine pointed shears or strong rounded scissors for trimming up your band, and lastly a fine cut half round file for smoothing the edges and filing up after soldering; then take the measurement of the neck of the root, either with tin foil or fine wire.

After cutting your gold as near as possible to the size required, using coin gold of about 32 American standard gauge, you proceed to bend up your band into shape with your half round pliers, and when fitted remove, pressing slightly together so that it springs over the tooth when tried on.

You now mark with a sharp instrument the line where the already levelled and overlapping ends meet, so that should the band tend to spring a little on being removed, it can be easily altered without trying on again.

It is as well to make the band slightly smaller than this mark, so as to allow for any stretching that may take place, and should it then be found that it is too small the defect may be overcome by placing it on the horn of an anvil as already described.

The band has now to be soldered, but before going into the details of this, I should like to say a few words about the solder. From experience upon that point I have come to the conclusion that the use of good solder is of just as great importance as using coin gold instead of eighteen carat for the bands, on account of the action of the various acids they have to withstand ; I have seen several cases where the crown has been in the mouth for some time, but has tarnished wherever the solder has been flushed.

Only a short time ago I noticed that in one of my own cases the solder had likewise changed colour, although the crown had been inserted but two weeks previously and soldered with the ordinary No 1 solder. But although there are some cases where even pure gold, however nicely polished, will tarnish, yet in the majority of cases it could be prevented by using a solder as good in comparison as the metal used for the crowns.

Though I have only seen three or four cases where the top of the crown was made of pure gold filled up with melted coin scraps, and the band made of coin gold had been soldered to the top with 20-carat solder, yet they all appeared to have retained their colour ; I should therefore advise the use of 20-carat solder in the majority of cases.

To return to the soldering of the band. Having placed a small piece of solder on the lap which has been previously boraxed, hold the band with the fine-tweezers over the Bunsen burner until well flushed. It is now soldered, but before trying on, it is best to file down any rough parts and to chamfer the edge of the band that is passed under the gum, taking care to burnish well in order to prevent any irritation.

The gold band is now ready to be placed upon the root; a piece of ivory or the back-bone of a tooth-brush filed up will answer the purpose driven up with a mallet; they must however, be serrated at one end to prevent any slipping taking place.

Great care must be used not to work the band up too far, it being only necessary to just go below the gum on the lingual, and only just enough to catch on the labial surface.

Having marked the line of contour of the margin of the gum upon the front of the band, the proper level can then be cut and the edges squared so that it makes an angle with the horizontal portion. Care must also be exercised that the band is not too high on the lingual surface allowing both for building up and a free bite.

The next step is to bend a small piece of gold to correspond with size of the band, well borax, and taking hold of the edge with your fine tweezers place the band on it in such a position as to fit perfectly, so as to allow the solder to run all round.

Although this is not always done when making a Richmond crown, I should strongly advise it, as it is practically impossible to fit a tooth so accurately to the band as to prevent all moisture from oozing through.

Having tried the cap on the tooth take a fissure bur the same size as the wire to be introduced, and cut through the gold just over the canal so that the wire slips easily into place.

The tooth can now be fitted to the front of the band having previously been backed with either fine, or coin gold. This finished, the cap is removed, and the tooth attached by strong wax and again placed in the mouth while the wax is warm, so that any slight alteration in position which is necessary can be easily made. The whole can now be removed and invested in equal parts of sand and plaster for soldering.

I do not think it is necessary to go into the details of soldering any further, as you are already familiar with them. But there is one small item which I have often seen overlooked, namely, that of clearing away the sand and plaster from the corners in order to allow the solder to flow easily.

Although this method may seem rather tedious to those of you who have not already tried it, it is more advantageous as the result will prove, provided the details of the work are carried out to the letter, and the natural teeth may be so perfectly matched in colour and shade as to defy detection.

Before finally inserting the Richmond crown fill the apex of the root and having thoroughly dried the crown and canal with hot air, mix some phosphate cement very thin, pass some up the root and put some in the crown, then take it between your two fingers and press firmly into place, giving one or two small taps with the ivory and mallet. It should be held in position for a few minutes until the cement is sufficiently hard to prevent displacement.*

After the cement has hardened pass a fine instrument under the gum in order to remove any surplus cement which may have squeezed out, and which might, by remaining there, excite inflammation.

The chief advantage of Richmond crowns over other ordinary methods of pivoting is, that once the root is properly enclosed in the metal cap caries cannot take place, owing to it being entirely protected from the fluids of the mouth. The only disadvantage to my mind that can be said to exist is that it is permanently fixed, and a difficulty arises with regard to accidents owing to its removal not being an easy matter.

But this difficulty may be overcome by fixing the Richmond crown in the mouth with gutta percha. This presents an advantage over the cement not only by its easy removal in case of accident but by its being unaffected by moisture.

But supposing the crown had been inserted with the cement and the tooth become broken, could we not by displaying a little ingenuity which appears to be one of the chief characteristics of the profession, contrive by some method or other to fix on a new front? If after removing the debris of the broken tooth we were to drill a couple of holes through the original backing just large enough to admit the pins of the new tooth, could not the pins be bent together and packed round with amalgam? or, perhaps, a more satisfactory operation would be to adjust it by means of a screw and nut.

But although it is as well to be guarded against accidents, yet how often do we meet with cases where the front has got broken?

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*I have drawn a section of the same left central as seen from the side when finished, (C) this shows the whole construction of the Richmond crown upon the root. The front view of the same tooth is illustrated in drawing (E), the slight rim of gold which is seen in the drawing is hidden by the gum when in the mouth.

However, the only suggestion I can offer is, "try this method for yourselves, and judge accordingly," for although it may be a very easy matter to discuss this method in theory, yet we cannot well support an argument of this kind unless we have done the practical work.

As I do not wish to encroach too much on the short but valuable time at our disposal this evening, I shall endeavour to speak as briefly as possible upon the second but more important subject of the two.

Crown work is, and always will be one of the leading features in the progress of dentistry, and therefore I feel certain that no time is wasted in investigating a subject of such vast importance.

Although there are numerous other methods to select from, none appear to give such satisfaction as the gold crown.

The advantages which it presents are:

Firstly, that it may be used successfully in the majority of cases.

Secondly, that without difficulty it can be kept absolutely clean.

Thirdly, that it will make the patient feel safer from accident than any other process of restoration.

And, fourthly, that it is one of the very few processes which admit of the restoration of articulating surface, for should the bite not be quite perfect, the surface can be ground down to suit any little defect that may exist, and is therefore most compatible with the laws of nature.

In selecting roots for the application of gold crowns, care should be exercised to select those only which are firm in the alveolar process, or which can be made so by treatment; also, that there should be sufficient of the decayed tooth left above the surface of the gum to allow a band of gold to encircle it; but in some instances where only one side is broken away beneath the gum and the remaining walls are strong it could be built up to advantage with amalgam, and then have the metal cap fitted.

Gold crowns should only be applied to molars and bicuspids, but if an objection is raised with regard to metal caps on bicuspids being unsightly, then an ordinary porcelain front can be adjusted after the style of the Richmond crown.*

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* This is shown in Fig. II (A) Representing a decayed root of an upper bicuspid. (B) The tooth when prepared. (C) The crown with a porcelain front. It will be noticed that the gold overlaps the porcelain at the tip.

This latter method presents the same advantages of excluding the moisture from the root as the Richmond crown, and is preferred by some instead of the special crowns, of which the depots do not keep a sufficient stock for matching.

If the root affords but little hold to the crown it can be strengthened, before permanently inserting by fastening a a strong well roughened pin in the root canal, so that the end projects into the cap, and is grasped by the cement with which the crown is filled.

The metal best adapted to this kind of work is coin gold rolled to about 32 American standard gauge for the bands and from 38 to 40 for the tops ; although pure gold is preferred by many for the masticating surface yet being by nature of great softness is more likely to wear away, and would then cause the solder or melted coin scraps beneath to become visible.

In order to illustrate the method properly I shall take for example a molar tooth which has had its roots treated and filled. See Fig III.

Having prepared the tooth with the same care and in exactly the same manner as if for the Richmond crown, proceed to fit the band.

The gold to be used should be cut a little deeper than the proper pattern, to allow for adjusting to the contour of the gum. This having been done and the band fitted and soldered in the way already mentioned, place it in position in the mouth in order to guage the height necessary, not forgetting that the top has yet to be soldered on.

This can be done by using a sharp instrument to mark the band all round, so that on removing the surplus, it can be cut down to the proper level by holding the top edge against the flat side of a corundum wheel, in order to obtain a perfectly level rim. It is now ready for the top.

Now as the restoration of articulating surfaces is claimed to be one of the great advantages of this method it is necessary to understand one or two of the modes in use. The quickest, easiest, and cheapest method of all is that of the zinc die, as one can always have a sufficient stock at hand to select from, and if necessary could make a particular die, to suit any bite within a few minutes.

Another way of adjusting the crown to the bite is to solder a plain piece of coin gold which has been cut to the required shape on to the band, and then having invested in sand and plaster, cusps are made to the required height and size, either from gold plate properly shaped, or by fusing gold into globules by the blow pipe and subsequently flattening them with the hammer; these are then placed in position and soldered to the grinding surface.

But although this method is of as great utility as the former yet it necessitates a longer time.

Another new and useful method for striking up tops is that of the S. S. White's die plate one of which Dr. Walker has kindlylent me for this evening. But taking for granted that the zinc die is preferred we proceed to strike up the gold top on a piece of lead with a heavy hammer, taking the precaution to place a piece of thick tin foil between the gold and the lead, as should this be neglected and a small particle of lead stick to the gold top the result might be disastrous when soldering. Having stamped up a sharp impression upon the gold flush with 20-carat solder touch the flat edge of the band with borax, place in the desired position on the flushed side of the top and by heating over the Bunsen burner, the top and the band will solder together most satisfactorily; trim up to the required contour and polish in the ordinary way. It is then ready for the mouth.

On finally inserting the crown the same care should be used as in that of the Richmond crown, namely, that the tooth and cap should be perfectly dry. Thick bibulous paper is very useful in such cases when placed on either side of the tooth to absorb the moisture.

There are several opinions as to whether it is necessary to have a small hole drilled in one of the cusps through which the surplus cement may escape, but I find on inserting a crown that however well it may appear to fit, there is always some cement squeezed out under the gum, before it gets driven thoroughly home, and I am of opinion that it is safer to put a little more in the cap than is absolutely necessary.

Although this is a subject that I could go much further into than I have done, yet, as I remarked before, it is not my wish to shorten the time allowed for the discussion of a subject that bids fair to remain one of the highest importance in dental art.

In touching on the manipulation essential to the success of operations of this nature, I trust that I have kept to the point in presenting the features which characterise it as a special method, and I do not doubt that any one who chooses to exercise his operative skill, would be able to complete successfully such an operation as I have just described.

FIG. I.

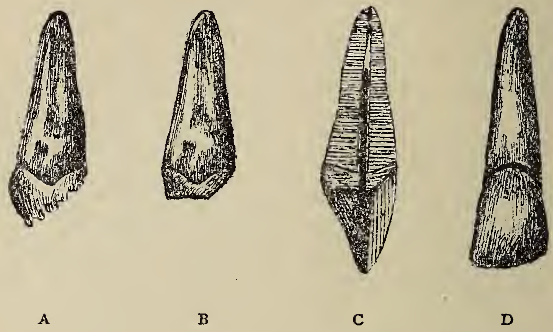


FIG. II.

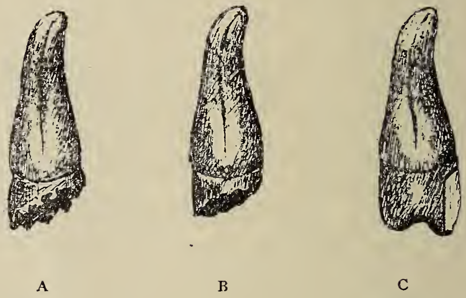
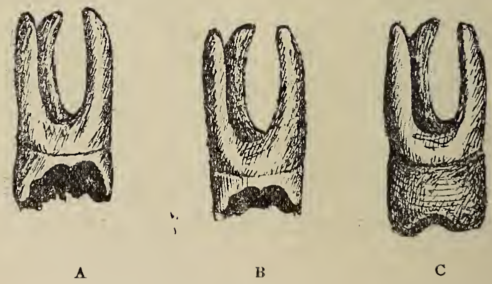


FIG. III.



INAUGURAL ADDRESS.

Before the Odontological Society of Great Britain, Feb. 1889.

By Henry Sewill, Esq., M.R.C.S., L.D.S.

On taking this chair for the first time, my most difficult task is to fitly express my thanks for the great honour you have conferred upon me, and to adequately set forth my sentiments of pride and gratification at finding myself in so elevated a position. It has been said, and I am very willing to believe it, that election to this chair forms the highest compliment which the dental profession can pay a member. I should be callous indeed if I were not deeply moved by such a mark of esteem; and I should be pervaded by a spirit of egotism more powerful than I can acknowledge withal if I were not fully conscious of my unworthiness in many respects. In conventional language, which is none the less sincere because hackneyed, I can only say that I most heartily thank you; that I shall do my utmost to merit your confidence, and that during my year of office I shall devote myself to the promotion of the welfare of our Society. If I have any qualification for this position, it is mainly owing to the fact that I have passed through several subordinate offices. The experience there gained made manifest to me that the success of a session, although dependent perhaps largely upon the President, depends more upon the officers, particularly the Secretaries, and most of all upon individual members. If members will do scientific work, if they will attend meetings and bring forward the results af their labours, enter with spirit into discussions, and recruit our ranks with eligible candidates, success is certain. I am sure of the zeal and devotion of our officers; and I will earnestly beg, for the sake of the Society and for my own sake, that members will exert themselves to render this year not inferior in achievement to those that have gone before.

My next difficulty is to discuss in any novel, attractive, or instructive manner that which must necessarily be my theme to-night, Odontological Science. The sole reason for the existence of our Society is the pursuit and promotion of dental science; and although questions still unanswered and problems still unsolved are of high interest, they have become by this time well worn. They have been eloquently and learnedly discussed by more than thirty preceding Presidents ; and it would require literary skill and the gift of language far exceeding my feeble endowments to present them in any form which should not appear somewhat flat and stale even to junior men, and probably wearying and unprofitable to senior members.

Notwithstanding all that has been hitherto accomplished, there yet remain unfinished tasks sufficient to satisfy the scientific ardour of our most zealous labourers. But of the questions which are still left for solution, perhaps those concerning the etiology of caries are to us among the most difficult as well as interesting. To illuminate all that is dark in our knowledge of the prime cause of tooth decay, inherent structural inferiority of enamel and dentine, demands far-reaching research. Evolution is an agent ; for we have the demonstrated fact of the diminishing development of the organs of mastication from the anthropomorphic apes by regular gradations through savage races of man to the civilised European. The question of heredity is involved ; for we see the dental characteristics of parents, even in the quality of the tissues, transmitted to children ; often the teeth of offspring will closely resemble those of one parent, the girls as a rule taking after the father, the boys after the mother. Again, disease acquired by parents often leaves its mark upon the tissues of their offspring ; and although the typical teeth of Hutchinson, the significance of which is unquestionable, are present in only a small proportion of undoubtedly syphilitic children, their occasional occurrence clearly shows the power of hereditary disease to influence the development of enamel and dentine.

When we consider that differentiation of the rudimentary mucous membrane into the germs of the future teeth is demonstrable before the seventh week of intra-uterine life, when we recollect that hereditary bias largely governs the formation of the organs, and when we bear in mind the early periods in infancy and childhood at which the outer shell of temporary and permanent teeth has become calcified and physiologically unalterable, it seems evident that to produce sound dental tissues we must, above all, direct our energies to improvement of the race.

Disease is no necessary accompaniment of civilisation. Most diseases which lead to deterioration of the human species and leave their mark upon the organism, including the teeth, are at this day preventible, and the time must surely come when every zymotic malady shall be as unknown in civilised lands as the plague ; when scrofula and rickets, and all diseases the products of darkness, filth, and starvation, shall no longer exist : and when ignorance, sickly sentimentalism, or pseudo-humanitarianism shall no longer be allowed to stand in the way of prevention of scourges like small-pox and syphilis. With finer physique, finer teeth will appear ; and in presence of the fact that man is steadily gaining more and more the conscious power of moulding his physical future, it seems absurd to suggest that in the end there can be evolved a toothless race. Our concern is, however, more urgently with the present than the future, and if we cannot help materially towards the production of sound dental tissues in our time, we can at least do much to prevent their decay, and do more to repair them when decayed.

Vitiation of the secretions of the mouth, a predisposing as well as the direct cause of caries, has not been hitherto exhaustively investigated. This, not so difficult a subject as the last mentioned, is equally important. If we were fully acquainted with the chemistry of the oral fluids in disease, more certain methods might be devised to prevent those changes which lead to the formation of acid and give rise to putrefaction and fermentation in the vicinity of the teeth.

Our knowledge of the process of disintegration of enamel and dentine in caries is almost complete, yet new facts might probably be of further practical value. The principles of treatment, the right method of preparing and stopping simple cavities, were empirically established many years before the physiology of the tissues was understood, and it is hardly possible that those principles can be overthrown. But instruments, materials for stopping, and methods of working them may be improved. The mechanical genius of our members may find and does find, exercise in improving our present instruments and in devising new ones. This in itself is a large subject, and very attractive ; but I must not now dwell upon it.

There is vast scope for scientific work to be directed towards the improvement of materials for stopping. For these we are too much dependent upon manufacturers, many of whom, there seems reason to fear, are imperfectly acquainted with the chemistry of the compounds which they prepare. A thorough research into the metallurgy of gold might lead to the production of foils capable of more rapid and certain manipulation than those with which we are now supplied. But of much greater importance than the improvement of gold do I hold the improvement of amalgams and all the class of plastic fillings. I need not enlarge upon the superlative beauty of gold stoppings from an artistic point of view, nor emphasise the fact that the dentist who has made himself a first-rate gold stopper has mastered the greatest difficulty of his craft ; and that to him no other operation will appear hard or laborious. But to insist upon gold stoppings for every case in which this material could be fitly used would be about as reasonable as to prescribe a warm winter climate for every case of incipient phthisis in which it might be beneficial. Gold fillings for carious teeth, like warm winter climate for every case of incipient phthisis in which it might be beneficial. Gold fillings for carious teeth, like warm winter climates, must be considered as luxuries beyond the reach of the vast majority of sufferers, and those most needing relief ; they are too costly. Besides this, gold fillings involve the infliction of pain and fatigue which cannot be borne by every patient.

To be concluded.

ON WHITE FILLINGS.*

By Mr. Whitehouse.

It is within my experience to have numerous cases of this class of work under observation, tooth and filling in as good a state of preservation as when inserted four or five years ago ; and, what is somewhat surprising, the most successful of all are large crown cavities in upper and lower molars in the mouth of delicate young people, where the abundance and acidity of the saliva has led one to speak of the treatment as only temporary. My experience of this class of case has arisen in this way ; instead of half filling the cavity with cement, previous

A paper read before the Odonto-Chirurgical, Society of Scotland.

to the use of gold or amalgam, which should be done for several important reasons, besides economy of gold and time in its adjustment, and the expensive amalgams, it is now the fashion to use, I have completely filled the cavity, and directed the patient to return in six months or so, to have gold or amalgam adjusted to the surface to take the wear of mastication. The fillings have quickly worn to a certain degree of cup-shape, but after that point wear has practically ceased. This wear is obviated by the use of the porcelain stoppers (*Ash's Catalogue*, p. 15), easily adjusted if due attention is paid to the little details presently to be described. There is no doubt but that cement fillings, whilst perfect as fillings, are as preservatives of the tooth substance, to say nothing of the nerve, as good as the best of the metallic class—Sullivan,—except at cervical margins under, or very near the gum. In such cases the treatment would be to adjust a pellet of gutta-percha, leaving it very full on the margin, completing the filling with cement, trimming when hard to the required shape, and then with a warm spatula, press in and smooth off the superfluous gutta-percha. To use any of the white fillings very near or under the gum is not to do justice to the patient, or cements.

It is much to be regretted that operators who are capable gold fillers, when they use cement or amalgam, will not *condescend* to be as interested and careful in gaining the best possible results with the latter as the former ; when commencing an adhesive filling the rubber dam is adjusted as a matter of course ; is that so when using cement ? And yet to get the best results in most cases it is as necessary for the one as the other.

The following simple experiment will prove that there is an absolute waterproof solution at hand to protect white fillings from the action of saliva in those positions where there is no wear, viz., in the interstices of the teeth—just that point where they are most liable to fail. On a flat surface of the composition, sold with the Model Duplicating Apparatus, place one drop of water ; in a few seconds wipe it off again. It will be found, unfortunately, that the composition has absorbed a portion of the water, and has swollen, and thus a bump has been raised on the flat surface (I say unfortunately, because it was several years before the use of this waterproof solution suggested itself, and thus remedied a serious defect of the apparatus in the hands of those who did not realise the importance of becoming practised in the use of very quick-setting plaster). Now float a little of the waterproof solution on a fresh place, and in two minutes it will be found the composition cannot absorb water, for let a drop remain ten minutes or more after wiping off, it will be found the surface is as flat as before, thus proving no water has been absorbed. Again, if any of the quick-drying varnishes be tried, it will be found they are not waterproof, for the composition will swell, not of course so quickly as when nothing is used: and if a little of the waterproof solution be run across a glass surface, in two minutes there will be found a film of gutta-percha, identically that used as the base of all gutta-percha fillings, adhering to the glass with considerable tenacity, and when removed, possessing a large amount of toughness and unbroken surface. This solution is most conveniently applied to a filling by floating it between the teeth from a small piece of amadou or wool held in the tweezers.

Four instruments are sufficient to adjust these fillings, No. 2, *Ash's Catalogue*, p. 204, to mix with (this instrument is rendered more useful by filing the top end, represented in the engraving as round). No. 2, p. 20, is useful, kept unsoiled, to pass between teeth to bank up the cement and remove the mass of overplus before setting. Nos. 31 and 33, p. 211, have proved themselves useful for the same purpose, more especially warmed to press in and pare off the superfluous gutta-percha at the margin. Fixed in some position always at hand should be a pad, oiled, or, better still, rubbed over with tallow, on which the instruments can be wiped to prevent the cement sticking to them. This may seem a very small matter to refer to, but unless these details are attended to, and every instrument one may possibly require immediately at hand, the cement commences to set before a proper adaptation to the edges of the cavity is made, and much has to be removed with chisels that had better been pressed off the edges of the cavity whilst soft. Of chisels, unless one is in possession of Nos. 2 and 4, *Catalogue*, p. 243, or very similar shaped instruments, the facility with which the trimming of fillings can be accomplished has yet to be appreciated.

In using the Cavity Stoppers, *Catalogue*, p. 15, when a suitable one has been selected and received any required grinding, it should be warmed and the centre touched with "sticky wax" (equal parts resin and wax), it can then be carried from the bracket by the suitable burnisher that will best press it into position, and adjust the cement around ; attempt to carry this smooth and round porcelain with the tweezers and it will likely spring from them.

White cements will be generally employed in the immediate future, in conjunction with gold, for filling large anterior or posterior cavities in molars, involving more or less of the crown. The chisel is used freely on fragile corners and enamel, the undercuts are not required so pronounced as for metal filling, the stickiness of the cement can be somewhat relied on, hence much pain is saved in the preparation of the cavity, and interference with the nerve avoided. No. 4 gold is cut to shape with a strong pair of nail scissors, as though intended to serve as a matrix, leaving enough to overlap the lingual and labial edges of cavity the 32nd of an inch, care being taken to get more or less convexity of outline in that portion to be in juxtaposition to the cervical margin of cavity. The gold is placed in position, and with a sharp point the festoon line representing the inner and outer cusp, and the depression in centre line of tooth, is marked, and the gold cut ; another piece of gold is bent to fit the depression, and soldered at this point, with No. 2 solder, to form the required masticating surface. By cutting, filing, and bending, and trying in the mouth, the ends of this gold can be brought into suitable contact with the first piece, the soldering is completed with No. 3 and a tag inside to catch in the cement, which is mixed thin, a portion worked on the tag, the remainder into the cavity rendered absolutely dry ; the cervical margin of gold s pressed home first with considerable force, using a strong excavator or right-angle chisel, which, catching in the gold, permits of controlling the direction.

A filling as described can be completed well in an hour, and at one sitting, although a previous wedging and application of carbolised resin has several advantages, and is sometimes imperative. A busy practitioner can save his time by taking an impression in composition the first visit, after knocking down the fragile edges, the cap can then be prepared in the workroom ; the impression usually will not show the cervical edge, the adjacent tooth of model must be cut off to admit the gold being left fully deep to adjust in the mouth. It is quite legitimate to grind a little off an antagonising cusp if, when finished, the bite is raised. In teeth where one may predict a speedy failure of the edges, especially at those most vulnerable points of all, the corners of the servical margins at the edge of the gums, I shall confidently believe, until time proves to the contrary, that the teeth I have treated as described will be as durable as those filled in the usual way, if not more so, and without doubt more artistically than amalgam. Also, if decay will not *commence* at a spot *compltely* under the gum, and the assumption is not far fetched that it will very rarely do so, there is much to be said for these fillings from this point of view.

IMPLANTATION OF TEETH.

By George Cunningham, B.A., D.M.D., L.D.S.

(*Concluded from page* 106.)

Case II. Younger's Tooth.—So far as I can gather this tooth had never become firm and was therefore removed. The result of the examination was somewhat similar to the above case, and a full detailed report of the results of microscopical examination by Dr. Heitzmam and Dr. C. F. Bödeker will be found in the *Dental Cosmos* for May, 1888.

Case III. B.'s (Curtis) Implanted Tooth.—This case is deserving of more particular attention, as it throws some light upon what may be termed a really successful case of implantation, although it was only in the mouth, nine months. In the absence of reproductions of my diagrams, I have been obliged to condense Dr. Curtis's own account as follows :—

On October 12, 1886, I successfully implanted a superior second bicuspid in the jaw of Miss B., aged twenty-five years. The natural tooth had been lost seven years before this operation, and the tooth implanted was extracted two days previous to its use by me. On July 23, 1887, I extracted the implanted tooth. It had been in active service for nine months without the slightest inconvenience to the patient, and without manifesting any unfavourable symptoms. The tooth was so firmly embedded that it was necessary to break it off, and split the root and remove it in sections. An anæsthetic was used, as the operation was necessarily painful. The socket was then deepened and a larger tooth implanted.

"On a recent examination the tooth was found to be firm, the surrounding parts in normal condition, and the stranger restored to actual life and health. The patient has the same full use of this as of its predecessor.

The extracted tooth, consisting of crown and upper two-thirds of root was at once placed in Müller's fluid (R. Potassic bichromate, 2½ parts ; sodist sulphate, 1 part ; aqua, 100 parts). After remaining in the solution a sufficient time, the tooth was decalcified, sections prepared and a microscopical examination made.

In a section of the middle third of root ; the dentine is found to be in a normal condition, the fibres are not shrunken, and the whole presents an appearance of a like section of a freshly extracted tooth. Toward the lower part of root the cementum is greatly thickened and has become converted into a dense fibrous connective tissue, partially calcified. At another part this fibrous connective tissue has become converted into true bone, connected directly with the dentine fibres. So intimate is this connection that it is impossible to say where bone begins and the fibres of dentine end. This formation of bone contains bone-corpuscles and Haversian canals.

Another section is from a different level, and shows limit of root where broken off. In this section is seen no fibrous connective tissue ; all is converted into bone. At one part is shown a transverse section of Haversian canal with its concentric lamellæ.

I may further say that, had the tooth subjected to experiment been unbroken, more points could have been proved. Had the tooth been whole, it could have been demonstrated whether the ossification extended to the entire length of the root. In my opinion it did. I believe that in this case the fixation of the tooth was caused by the reproduction of bone tissue of the alveolus. The inflammation consequent to the formation of a socket produced an infiltration of osteoblasts, or bone-corpuscles into cement substance. The outcome of this process is bony anchylosis."—

Professor Black, who examined the slides of Dr. Curtis' case, gave it as his opinion that what has been described above as bone is really a new layer of cementum.

In estimating the value of these three microscopical reports, it is important to bear in mind the condition of the scion tooth previous to implantation. In the first two cases no details have been given, but since both may be regarded as Dr. Younger's cases, and since we know his practice in such matters, we may conclude that they were both "dry teeth" which had been out of the mouth for some time. In Dr. Curtis' case, he informs us that the scion tooth was extracted two days previous to implantation. It is a pity that the further details as to this treatment in the interval, viz., as to the medium in which it was kept and as to the treatment of the pulp, have not been furnished. The interval during which the scion tooth was out of the mouth was sufficiently short to let us assume that it was a "live tooth," and thereby affording some explanation of the difference in results.

Even if, as is not improbable, certain cells in the area of inflammation take on absorptive action in every case, it does not necessarily follow that such action will advance rapidly, or even continue slowly until the process is complete. Systemic nutritional power must be an important modifying factor. In favourable cases the "builders up" (osteo-blasts or cemento-blasts) may assume supremacy over the "breakers down" (osteo-clasts or odonto-clasts). If the recuperative power is feeble and the quality and quantity of the blood supply is poor the abortive process may run a rapid and destructive course. Systemic peculiarities and defective manipulation are no doubt the most important factors in inducing the final loss of the tooth by absorption of the root.

There can be no question, however, that no matter what the theories of Dr. Younger are, his success in practice commands our utmost respect for an operation whose introduction was hailed by the profession with too general a chorus of laughter and incredulity. A duration of little over two and a-half years in an operation like this is manifestly too short a period to enable us to come to a definite conclusion in the matter, especially when we remember that the process by which these teeth may fail in time—except, of course, those that have failed within the first few days or weeks—is usually a slow one. We fear that in the course of time a certain number of those temporary successes will, like their near relations, replanted teeth, fail by reason of the slow corroding effect of an absorbent organ. If our fears prove unfounded, so much the better for poor humanity.

It is evident that a satisfactory knowledge of the necessary conditions and the best lines on which to conduct the operation of implantation, can only be attained by detailed statistics of the experimental operations.

Meanwhile, we may, I think, safely adopt the following :

General Conclusions.

I.—That in the present state of uncertainty as to the rationale of the process of repair, experiments on animals are desirable since they afford the only means of ascertaining the actual relations of the artificial socket to the implanted tooth.

II.—That so far the operation of implantation is practically a success—and that, whether " dry " or " live " teeth are employed—though it is as yet premature to measure that success in years.

III.—That the operation is only capable of limited application ; but, in these special cases where it is applicable, the implanted tooth fulfils its function better than any other remedial treatment hitherto known in dentistry.

Chronic Cocaine Poisoning.—M. Magnan, at the Société de Biologie, lately (*Progrès Med.*, No. 5) described three cases of chronic poisoning by cocaine characterised by marked mental and sensory disturbance. The first case was one where cocaine had been substituted for morphia in the relief of renal colic. After two months' use of the drug the patient began to suffer from illusions of sight and hearing and neuromuscular irritability. He discontinued the cocaine for six months, resorting to morphia ; but on again resuming cocaine the delusions recurred, the patient feeling imaginary blows on the body, or something under the skin, together with a certain degree of analgesia. At the end of a short time he had an epileptic seizure. In the second case (one of hepatic colic) the same substitution of cocaine for morphia had been effected, and produced very similar effects, also terminating in an attack of epilepsy. The third case also presented hallucinations of sight and hearing, sensation of foreign bodies beneath the skin, and slight analgesia. M. Magnan pointed out that in its action on sensation and the sensory organs cocaine seemed to resemble the alcohols and absinthe rather that morphia, with this difference, that whereas the influence of cocaine poisoning seemed to operate on the cerebral cortex from the occipital lobes forwards, alcohol and absenthe appeared to affect the cortex in the reverse order.

British Journal of Dental Science.

LONDON, MARCH 15th, 1889.

BRITISH MEDICAL OR BRITISH DENTAL ASSOCIATION.

We drew attention in our last issue to a proposal made by Mr. Ackland, of Exeter, that there should be a Dental Section of the British Medical Association, and as Mr. Ackland's communication seems to have somewhat troubled the waters we propose to offer a few remarks upon the scheme. As those of our readers who have read their "Journal" for the past ten years must be aware, the present proposition is not a new one. There were, and possibly still are those among us who while they are not too proud to make their income out of dentistry have yet qualms lest they should be called "Dentists," and hence the euphemism of "Surgeons practising Dentistry." The "surgeons" have ever been anxious to affiliate with the B.M.A. as naturally holding their views about the degradation of being yclept dentist, they would not fraternise with the B.D.A. But independently of the surgeons who practise dentistry there are those who regard affiliation with the medical profession as a desirable consummation—a conclusion with which we are hardly prepared to assent. In the first place there are comparatively few members of our profession who are eligible for election, M.R.C.S.'s although we hear much of them in London are few and far between even in the larger provincial towns. Assuming the section were fortunate enough to attain the number of 100, how many of these would attend the meetings, and of these how many would give up their time to prepare papers to read, to a small even if intelligent minority—and have them published in a journal which is not read by one in fifty dentists? The association of dentists with medical men at B.M.A. meetings might be said to be desirable both socially and professionally, but the four days scrimmage through quasi-scientific papers and rough-and-tumble discussions upon some recondite matter such as the "Tabetic symptoms in Charchot's Joint Disease" or "Etiology of Raneau's arterial paralysis," appear to us of doubtful value. Especially is this so when we possess well within our own confines, societies which are competent to discuss the scientific and practical bearings of dentistry, and if need be, are able to call in the aid of the leading men in both the medical and surgical professions to elucidate those bye issues which merge on the one hand into dentistry and on the other into medicine or surgery.

Dinner of the Dental Hospital of London Athletic Club.—The annual dinner of the above club was held at the Holborn Restaurant, on Saturday, March 2nd. A large company was present, the chair being taken by the President of the Club, Sir Edwin Saunders. The dinner was in every respect a brilliant success. The usual loyal toasts having been drunk, the chairman proposed the toast of the evening, viz., "The Dental Hospital of London Athletic Club," in doing so he referred to the rapid progress made by the Club, and also to the great benefit to be derived from the mingling of athletics with dental work. With the toast he had much pleasure in coupling the names of the Hon. Secs., J. F., and A. R. Colyer. In replying, Mr. J. F. Colyer dealt briefly with the various branches of the Club, referring in turn to the Football, Lawn Tennis, Cricket, and Musical Society. The financial affairs, an essential part of every club, he was glad to say were in a most satisfactory condition. Passing on, he then explained the causes of their success, attributing it to the interest taken in the students by all the members of the staff, and also to the great support received from the students at large, no less than seventy-five being members of the Club. As to the near future of the Club he thought there was not the slightest cause for fear, and felt sure that next year would be still more successful than the past. Mr. A. R. Colyer also responded. The toast of the "Dental Hospital of London, and London School of Dental Surgery," was proposed in appropriate language by Dr. Bristowe, he referring especially to the great progress made by the profession during the past few years. This was responded to by Messrs. Sibley, and Morton Smale, the latter gentleman, referring to the students, said that the staff did not forget them directly they left the school. They were always pleased to hear of any successes achieved, and honours gained. The Athletic Club he thought was like a mother with all-embracing arms, it embraced not only Cricket, Tennis, Football, Music, Smoking Concerts, but it was also going to start a Journal, and also a Swimming Club. Besides the long list of toasts, a good musical programme was got through. The selection from the "Pinafore" was well rendered by the members of the Musical Society, under the direction of Mr. David Hepburn. Mr. Hepburn sang "The Skye Boat Song;" Mr. Knowles, "The Cricketer's Song:" Mr. Wheatly, "I'll sing thee songs of Araby:" Mr. Harraden gave a clever Musical Sketch, entitled "Words for Songs;" Mr. Barrett sang "The Longshoreman;" Mr. Rae's four songs were much appreciated. The piano was presided at by Mr. Bright, whose excellent performance contributed in no small degree to the success of the Concert. The evening ended by the singing of "Auld Lang Syne."

DR. OR MR. WHICH?—The battle of titles seems likely to be fought out in a wider arena that that of the Odontological Society. Mr. J. S. Hutchinson, late lecturer at the London School of Dental Surgery, has written the subjoined letter to the Lancet. Dealing with the question of "Dr." or "Mr." as used by dental surgeons, he says, I do not consider that any dental surgeon, however highly qualified as such, has any right, moral or legal, to use the title of "Doctor," unless he possesses in addition to the L.D.S. or other registrable dental degree or licence such a medical degree (M.D.) as entitles him to be placed upon the Medical Register, and to use such title or description as shall imply that he is a registered person. I am willing to admit that in certain countries, such as America, and in certain districts of Scotland and Ireland, the law of "custom" permits the use of the title "Doctor" by practitioners of surgery and its branches ; but even in such places it is a matter solely for the judgment of the individual himself whether he cares to be so designated, even if legally qualified as an "M.D." Looking upon dentistry as a branch of surgery, I venture to contend that the above expression of opinion applies to those who practice it in England or elsewhere. In conclusion, I would only say that, in my individual opinion, no degree or diploma in dental surgery—be it D.D.S., D.M.D., or L.D.S.—gives any prescriptive rights beyond that of placing its possessor on the Dental Register ; providing that the College granting it is duly recognised by the Medical Council of Great Britain. The section of the Medical act dealing with the question runs—"Any person who wilfully and falsely pretends to be, or takes or uses the name or title of a physician, doctor of medicine, licentiate of medicine and surgery, bachelor of medicine, surgeon, general practitioner or apothecary, or any name, title, addition, or description implying that he is a registered person, or that he is recognised by law as a physician, a surgeon, a licentiate in medicine and surgery, or a practitioner in medicine, or an apothecary, may, upon a summary conviction, be fined a sum not exceeding £20."

PAINLESS DEVITALISATION OF PULPS.—Dr. Shattuck's plan is to take arsenious acid, put it into an ounce vial and pour creosote on the arsenic—a little more than will cover it. When you wish to use the paste, tip the bottle so you can reach the arsenic and apply directly to the pulp ; or you may take a pellet of cotton and apply that way. The paste prepared in this way is ready for immediate use, and will stop the most violent toothache in about five minutes. The addition of other drugs he regards as a detriment to the paste.

To MAKE the rubber dam enter easily between teeth very close together, soap it; also soap the dam to prevent disks from catching and tearing it.

SOME ANTIQUARIAN NOTES ON DENTAL MATTERS.—We now add some further jottings from Notes and Queries, we cannot fail to interest those among us who like to unbury the "dead past"

TOOTH-BRUSHES.—There is a very curious M.S. collection of receipts, commenced *circa* 1623, and once in the possession of Elizabeth, Lady Morton, who presented it in 1679 "to her Deare Brother William Ffinch at Hun........in Lincolnshire." It contains several tooth-powders; but no mention whatever is made of brushes wherewith to apply them to the teeth. The following are samples :—

"Dr. Myrons Dentryfris powder for the teeth to keepe them whit :—

"Burne a peece of Corke till it looks like a Coale, then take it out of the Fyre and it will fall to ashes wherewith rub your teeth."

"Sir Joslin Perceis—to make clean the teeth wheresoever they be Black or foule :—

"Dip a little Rag in Oyle of Sulphere and rub your teeth with it; but let none goe into your Mouth for it is terrible ill-tasted, but of no Danger at all if any goe downe the throate: it will make the teeth pure white; but it is not good to be vsed but now and then."

These "dentifrices" are to be applied with rag or with the finger to the teeth.

OXYCYANIDE OF MERCURY AS AN ANTISEPTIC.—The comparative merits of oxycyanide of mercury and corrosive sublimate are to be summed up as follows :—The solution of the former has a slightly alkaline reaction, and precipitates albumen only slightly. It is less irritant solutions of the chemical 1-1500 do not attack, except slightly, the materials used for surgical instruments. When tested by the power of preventing decomposition of soup, its antiseptic power proved to be six times greater than that of bichloride of mercury; while tested as to its power to destroy the micrococcus pyogenes aureus, the advantage lay somewhat in favour of the sublimate, 1-1400 of the former to 1-1300 of the latter. When employed on suppurating surfaces, or to render mucous surfaces antiseptic, it furnished much better results than the bichloride, because of its much greater tolerance by the tissues and of the small amount absorbed thereby.

CARBONIC ACID AS AN ANÆSTHETIC.—In operations of short duration, Dr. Voituriez of Lille recommends the employment as a local anœsthetic of solutions under pressure of carbonic acid, the anæsthetic properties of which were made known by Professor Brown-Sèquard. Insensitiveness to pain is obtained by the projection at ten centimetres of the contents of from two to three syphons of artificial seltzer water on the limited region of the skin on which it is intended to apply the cutting instrument, and this analgesia persists during four or five minutes. It becomes gradually attenuated, so that one is obliged to have recourse to new irrigations, but this becomes necessary only when the operation is prolonged, and generally about the moment when the sutures are being applied.

THE PATHOLOGY OF MUCOUS CYSTS.—At a recent meeting of the Pathological Society Mr. W. G. Spencer read a paper on the Formation of Mucous Cysts in the Mouth. A simple mucous cyst was excised from the lower lip and vertical sections were made. The specimens under a low power showed the dilatation of the main duct of a labial gland, to form a primary retention cyst immediately after the junction of two secondary ducts. The cyst occupied partly the position of the epithelium and partly of the submucous tissue; it was covered on its surface by the superficial layer of the epithelium ; its wall was formed by small round cells, outside which the bloodvessels were dilated. The epithelium on each side of the primary cyst contained a number of small secondary cysts, varying in size. The labial gland itself was normal. Under a high power the formation of the secondary cysts was seen; at one point were natural epithelial cells with the prickles stretched across the intercellular spaces ; at anothor point the intercellular spaces of the epithelium were dilated in a moniliform manner, the prickles being still stretched across many of these dilatations. Between the intercellular spaces so dilated the epithelial cells were in process of degeneration, a hyaline globule of mucin being seen in their substance. In other places the dilated spaces had united to form small cysts, the epithelial cells between them having broken down. The nuclei of the epithelial cells appeared to resist this myxomatous degeneration longer than the cell substance ; for, besides granular debris and mucin, remains of cell nuclei were to be seen among the contents of the small cysts. The larger secondary cysts were formed by confluence of smaller ones. The interest of the specimens was two-fold—first in illustrating the formation of primary and secondary cysts, and secondly in the fact that these cysts formed again after excision, unless, as it was said, the cyst wall was destroyed. These sections showed that in the present case the secondary cysts were not formed by the cyst wall, but in the epithelium around the primary cyst. An explanation of the process suggested itself ; the primary retention cyst set up inflammation in the structures around its wall, and this obstructed the flow of lymph in the intercellular spaces of the epithelium, dilated them, and the cells, having their imbibition diminished, underwent myxomatous degeneration. A similar process taking place in an acute manner produced a vesicle, as described by Dr. Klein in sheep-pox, but he did not know that the production of cysts in this way had been before noted.

Abstracts of British & Foreign Journals.

THE DENTAL REVIEW.

PRESIDENT'S ADDRESS—ECONOMY IN THE DENTAL OFFICE.

By James W. Cormany, M.D.

The writer gives a few hints and recipes which have proved useful and can be carried out at a small expense of money. Firstly, Soap.—Save all small pieces of soap that accumulate about the office from the operating room and laboratory, cut into small pieces with a knife, place in a tin vessel, add a little water, pumice stone (powdered) and a very small amount of concentrated lye, boil over a slow fire until all is nearly dissolved or melted, pour out into a vessel for moulding, and when cold cut the desired size, this makes the most desirable laboratory soap; it will remove all stains. Save all the scraps of wax and modelling composition, put into a tin vessel four inches in diameter and ten inches high, with a handle like an ordinary tin cup, with about three additions; in other words, a three story tin cup; into this place scraps of wax and modelling composition and, add a pound or two of ordinary beeswax, for your vessel must be made full. Now pour in about a pint of water to keep from burning; when all is melted, lift off the fire, and have two pieces of glass just wide enough to go into the vessel containing the melted wax, and long enough to reach above the top to afford space to grasp it, near by a pail of water with a piece of ice in it; place the glass into the water until cold, now take the glass out of the water and put into the melted wax, lift out immediately, scrape off edges with spatula, plunge into the cold water, and two very nice sheets of wax, just the thickness and toughness desired will fall off. Buy one ounce of chloride of zinc crystals and one ounce of oxide of zinc. Make a saturated solution of zinc chloride in water, and this with your oxide will make oxychloride of zinc, as bought from the manufacturers. An ordinary ledger with the following characters, will enable you to keep the record correctly of any given case as well as the most expensive record book now in the market. Name the teeth in the superior maxillary, commencing with central incisor, right or left, *a*, *b*, *c*, *d*, *e*, *f*, *g*, *h*. Name the teeth in inferior maxillary, commencing with the central incisor, right or left, 1, 2, 3, 4, 5, 6, 7, 8. Adopt marks to indicate respective place on or in the tooth :—Crown. Anterior. Posterior. Outside. Inside. Pulp chamber filled.—Nerve broaches, with barbs removed, makes an excellent instrument for working gutta-percha into root canals. To make an efficient substitute for a rubber dam punch, stretch your dam over the end of an ordinary excavator, and by touching near the point with a sharp instrument a hole will be made as perfect as by any punch in the market. Make your matrices out of an ordinary strip of tin or copper, and by pinching or soldering the ends together this will answer the purpose of a more expensive instrument. Do not throw an excavator away because you have broken the point off, but heat this same end over alcohol, or gas flame, and with the anvil and hammer so shape as to make a larger instrument. and if you do not possess the skill to shape with anvil and hammer, you can surely grind, and when made in proper shape, heat to cherry red and plunge into a piece of ordinary toilet soap, and you will have a tempered instrument that will cut glass. Cut your rubber dam in pieces about four by nine inches ; but at the narrow end, about one inch back, punch your holes for the teeth, after used this way, wash, rinse, and dry well, then cut off about two inches from the end containing the holes, and your remaining piece is ready for your patient again. The rubber dam need not always be used ; an ordinary small napkin, properly folded with skilled fingers will keep a cavity dry sufficiently long to insert any amalgam filling. Small napkins can be made out of birds eye linen. They do not need to be hemmed, and when the starch is washed out, make a very nice useful napkin. An ordinary diary will make you a splendid appointment book. The rubber dam can be effectually tied on with ordinary linen thread, which costs very little.

DENTAL COSMOS.

ELECTRICITY AND SULPHUR IN DENTISTRY.

By Dr. Horace Dean.

A paper under the above title was read before the First District Dental Society of New York. Mr. Dean said that having been acquainted with the germicidal properties of Sulphur for many years, he within the present year (1888) thought it might be applied to the disinfection of root-canals. Since the time of his first experiments, ten months ago, he has used sulphur exclusively. This method is briefly:—A small twisted platinum wire is attached to the electric cautery, dipped in sulpher, conveyed to the canal where the heat is applied. The result of this treatment is that shorter time is required to restore inflamed or abscessed roots to health; generally almost immediate cessation of pain; no other medicaments are necessary. Out of a large number of devitalized teeth, which have been treated not more than 5 per cent have been lost, a result he is unable to obtain byany other method. To illustrate the scope of the Sulphur treatment, a case of two superior central incisors is taken. The left has a larger saucer-shaped approximal cavity extending nearly the full length of the tooth, the walls merely of thin enamel pulp almost exposed dentine, and patient supersensitive. There is no room for adequate undercuts, and the patient will not tolerate drilling. Before applying the rubber-dam the gums are fumigated with sulphur to lessen the pain of ligaturing, then before commencing to bur flood cavity with fumes, this is quickly done, and its effect is as lasting as of any other obtundent. Where the cavity is shaped as much as possible, melt a little sulphur and place it in some cylinder on end, and before the cement becomes cool and brittle, proceed to build up adhesively with gold. The right central requires crowning. Its canal contains a putrid and stinking pulp, and there is an abscess with its concomitant inflammation and pain. The canal is fumigated, then opened up gradually, alternately fumigating and drilling. The canal is now preferably closed, and patient dismissed for a few days, until the inflammation of the surrounding parts .subsides. If necessary, the sulphur treatment can be repeated. Dr. Dean also describes his method of attaching a crown by means of a wood pivot, using Sulphur as embedding material in crown and root.

LANCET.

UNUSUAL EFFECT OF A FULL SUBCUTANEOUS DOSE OF COCAINE.

(Under the care of Mr. J. Henry Ashworth.)

The interest in the case is the record of symptoms which followed the subcutaneous injection into the lip of a quantity of cocaine. Probably some cases recorded as "cocaine poisoning," are simply due to the effect of the operation, though a slight and painless one; thus a syncopal attack is not unfrequently met. In others, the only conclusion is that in certain individuals there exists an excessive susceptibility to cocaine as an idiosyncrasy, but there is, unfortunately, no means of discriminating those who are susceptible from those who are not. Aged and feeble women were believed especially prone to its toxic effects; but more extended observation has proved that hardly any age is free from this susceptibility, and that neither sex nor state of health makes any difference. In 1885 Nettleship drew attention to a series of cases in which panophthalmitis had followed its employment. The manifestation of its toxic effect after hypodermic injection does not depend upon the use of large doses. Four minims of a 20 per cent. solution produced great rigidity, convulsions, and collapse. Mattison, who collected thirty cases, mentions one in which four minims of a 4 per cent. solution produced toxic symptoms in an adult. Mowat found symptoms follow the injection of three minims and a half of a 20 per cent. solution into the cheek. When applied to the cornea, two minims of a 2 per cent. solution have produced nausea and vomiting lasting for many hours, with great prostration and paralysis of the tongue and limbs. Zeim of Dantzig relates a somewhat similar case, the symptoms, however, varying; he also recorded seventeen cases, in which weak solutions produced symptoms (two to four minims of a 4 per cent. solution in eight cases, of a 2·5 per cent. solution in four, and of a 2 per cent. solution in five). In fact, weak solutions, whether applied to the cornea, mucous membrane, injected into the skin, or swallowed, may produce symptoms in some cases resembling those of collapse, in some amounting to violent delirium. Under these circumstances it is as well for those about to employ the drug to be ready with the means of combating them. The subcutaneous injection of ether, as in this case, has proved useful ; also, the inhalation of ammonia ; but the inhalation of nitrite of amyl (as recommended by Schilling) has been most useful. M. Martin employed caffein with some success. The patient, a middle-aged man, and fairly well nourished, but whose heart was weak and irregular, no actual murmur being detected, was admitted for recurrent cancer of the upper lip. Owing to the condition of the heart it was decided to use cocaine locally, of which ten minims of a 5 per cent. solution was injected on either side of the part to be excised, making one grain in all. The patient very soon became somewhat excited, and complained of "feeling queer," the respirations at the same time becoming rapid and shallow, and the pulse quick and feeble. This condition gradually became worse, until about twenty minutes after the administration of the drug the pulse-rate was 160 beats per minute, and was scarcely perceptible at the wrist, although the carotids were felt to be pulsating strongly. The respirations were very rapid, shallow, and irregular, with an occasional deep one, more resembling a sigh. The patient appeared to be panting for breath, but unable to satisfy himself, until suddenly he would manage to take a deep inspiration, and would then seem relieved, but only for the moment, when the same condition would rapidly return. He was totally unable to control his breathing momentarily in order to take an inhalation of sal volatile. The pupils were normal, and reacted well to light. There was no extreme pallor, as mentioned in the books, indicating a contraction of the capillaries ; on the contrary, there was marked cyanosis, especially noticeable on the lips and forehead. The feet became cold, and the skin covered with a clammy perspiration. As soon as the pulse showed signs of marked enfeeblement he was given a draught of sal volatile, but with little effect ; he was then given a hypodermic injection of twenty minims of ether, which revived him considerably and greatly improved the vigour of the pulse, but only for a short time. These hypodermic injections were repeated three or four times at intervals of six or eight minutes, when the effects of the cocaine began to pass off. In about an hour and a half he seemed quite himself again, the respirations becoming quiet and easy and the pulse full and strong, but still remaining at 112 beats per minute. He was then given six ounces of mist. vini. gallici, and the operation was proceeded with, from which he has made a complete recovery.

SUPPURATION OF THE ANTRUM, SECONDARY TO CARIES OF A TEMPORARY CANINE TOOTH.

By R. Denison Pedley, F.R.C.S. Ed. L.D.S.

On May 7th, M——, æt. 8, was brought to the Evelina Hospital with the following history. She had suffered from inflammation of the lungs once, 3 years ago she had measles, since which she had suffered from otorrhœa. The present illness commenced five weeks previously with aching and swelling of the cheek. A doctor was consulted, who removed a tooth, and some matter coming away from the socket. A week later a painful lump was noticed below the left eye. The face was considerably swollen on the left side, involving mostly the cheek, which was red and brawny. There was a fluctuating swelling below and external to the inner canthus of the left eye, and at its summit there was a thick yellow crust, from beneath which pus was oozing. The crust being removed, examination with a probe showed that this was in connection with the antral cavity. On inspection of the mouth, a scarcely healed wound was seen between the temporary lateral incisor and molar teeth, showing clearly that the temporary canine tooth had been removed. The hard palate on the affected side was quite normal, but viewed from outside the anterior wall of the left antrum was more prominent than the right. No fluctuation could be obtained through the antral wall. The child was placed under chloroform, and with an ordinary gimlet, previously rendered aseptic, the orifice through the canine socket was enlarged. The developing permanent canine, which was above and in front of the opening, and lying quite loose, was removed. A probe was then thrust into the antrum, and out on to the cheek. The cavity of the antrum was carefully explored at the same time, the walls appearing healthy, except anteriorly. The sinus on the cheek was dressed with boracic ointment, and a pad placed over it. The antrum was syringed out with warm boracic lotion through the perforation in the jaw. The mother was then directed to syringe it frequently with this lotion. On June 4th the sinus on the cheek was found to be quite healed. By the 18th the wound in the mouth had closed up, and for some days it had been found impossible to introduce the nozzle of the syringe. *Remarks.*—Collections of pus in the antrum in childhood are of rare occurrence. Owing to its small size the roots of the temporary teeth lie well outside its walls, which are comparatively thick ; and when suppuration takes place round the fang of any tooth a ready exit is found through the porous alveolar ridge into the mouth. In this case the pus from an alveolar abscess at the root of a canine tooth had burrowed deeply beneath the permanent canine, and, finding its way into the antrum, had probably pushed the mucous lining before it (there was no discharge from the nose), and then pointed through the anterior wall and out through the cheek.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Annual General Meeting, January 14th, 1889.

Mr. S. J. Hutchinson, M.R.C.S., L.D.S., *Vice-President*, in the Chair.

The minutes of the previous meeting having been read and confirmed,

The Chairman said : Gentlemen, this being the Annual Meeting of the Odontological Society, we commence our proceedings by opening the ballot for the election of President, Officers, and Council for the ensuing year. I have also to announce that the Council have the following recommendation to make, viz. : " That three additional non-resident members be elected at the Annual General Meeting." Perhaps some gentleman will move that as a resolution.

Mr. Felix Weiss moved the resolution, which was seconded by Mr. Arnold Rogers, and carried.

The following changes in the Society's Bye-laws were then proposed and carried :—

Rule XVIII. *To Read*, The Officers of the Society shall be elected from the Members, and shall consist of a President, six Vice-Presidents, a Treasurer, a Librarian, and three Secretaries (two in ordinary, and one for foreign correspondence); who, with *eighteen* other Members, and Curator of the

Museum, *ex officio*, and the Editor of the Transactions, *ex officio*, shall constitute the Council, and shall have the management of the Society's affairs.

Rule XIX. *To Read*, The President, three of the Vice-Presidents, the Treasurer, the Librarian, the three Secretaries, and nine of the Councillors, shall be elected from the Resident Members, but the Council may recommend a President from the Non Resident Members not oftener than once in three years. The remaining three Vice-Presidents and *nine* Councillors shall be elected from the Non-Resident Members.

Rule XXII. *To Read*, Of the *eighteen* Councillors, three of the Resident, and *three* of the Non-Resident, shall go out of the Council by rotation annually; and shall not be eligible for re-election for the ensuing year. The other *twelve* shall remain on the Council.

The Chairman then called upon the Treasurer to read his report.

The Treasurer (Mr. Thos. Arnold Rogers); I am very happy, Mr. Chairman, to record a prosperous year. You will remember last year I said I was afraid we could not look forward to having so large a balance this year as we had then, in view of the greater outlay we should have to incur. The expenses are very much increased: one item of increase is that of rent, and another that of adapting ourselves to the place; further, we have a considerable increase in the cost of our Transactions. I should state that it is very difficult to get the whole expenses included in one year.

I think the Treasurer gives the number of new members and the losses by resignation and otherwise.

The number of new members elected for November, 1887, has been—Resident 7; Non-Resident, 8; Honorary, 2; Corresponding, 1; total, 18. Under the head of resignations we have one removed from the list of members, and one death. With reference to this last, I should like to say one word respecting Mr. George Hilditch Harding. Mr. Harding was, I think, a young man of considerable promise; he had attained a reputation and a position in his profession. Many here will doubtless remember him as a constant attendant at our meetings, and I am sure that all who remember him will do so with respect; he was a member we shall miss, and we all deplore his untimely removal.

Our total number of members is 349. I should like to take this opportunity of thanking the Society for many kind courtesies and considerations, and would only add that if they wish to show me yet one more kindness they can do so by sending in their subscriptions punctually, and thereby save me a large part of a correspondence which I can assure you is not light.

The Librarian (Mr. Felix Weiss) then presented his report.

The Chairman then read a letter from Mr. David Corbett, the President of the Society, expressing his regret for being absent.

Mr. David Hepburn proposed, and Mr. Woodhouse seconded a vote of thanks to the officers.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

The First General Meeting of the Society, session 1889, was held in the rooms, 30 Chambers Street, on Thursday the 10th of January—Dr W. H. Williamson, President, in the chair.

The President said that the Society met for its first meeting of the session under very depressing circumstances, owing to the sad death of one of their members, two days before. Mr. Finlayson was one of the early members of the Society, and continued one of its staunchest supporters to the end. He was a most regular attender, contributed freely to the discussions, and in every way proved a very valuable member. He was sure Mrs. Finlayson and family would have the most hearty and sincere sympathy of the Society; and he would move that a resolution of sympathy with them should be passed and duly recorded in the minutes, and that an excerpt from the same should be forwarded to Mrs. Finlayson in the form of a letter of condolence.

The President showed Dr. Taggart's corundum disc and point-maker, which enabled one to make one's own, including the thin Arthur discs. The special advantages were the exact centering, and, from the material being directly moulded on the mandril, the attachment of the disc to it was secured. A stock of old laboratory corundum wheels could thus be used up in a satisfactory manner. The instrument was illustrated in the advertising pages of the "Cosmos," and "Items of Interest."

Mr Biggs said he had much pleasure in endorsing all that Dr. Williamson said about Dr. Taggart's corundum point and disc maker. Dr. Williamson recommended dry heat to soften the corundum, but he thought that soapy hot water would be found to be very much preferable, it being cleaner, quicker, and less injurious to the tool. The cost of making the discs was under one farthing (mounted and finished), and they ran so true as to leave nothing that could be desired in that way; and he thought every dentist ought to possess one. The time occupied in making one of the discs, including mandril, is just one minute.

Mr. Wilson exhibited the skull of a manatee (manatus senegalensis) showing most admirably the dental arrangement of the animal, upon which he made a few short explanatory remarks, chiefly touching upon the manner in which the teeth were erupted and took their place in the jaw.

Mr. Biggs stated that he had carried out a series of experiments in connection with the combination of gas and chloroform, with very satisfactory results—using from twelve to twenty-four drops of chloroform on cotton wool placed on the tube of the gas inhaler, behind the valve, and then turning on the gas and administering it in the usual way. He found the jerky movements of the head were considerably diminished, and the time at the disposal of the operator greatly augmented. He had the idea from Mr. Somerville Woodiwis, of West Hartlepool, about two years ago. He desired the members to give it a trial, and on some future occasion bring it up for discussion.

The President said that Mr. Biggs' experience seemed to have been very satisfactory, but he thought such a method ought to be tried very cautiously, if at all, by a single-handed operator, as such very small doses of chloroform appear to have caused death in many cases. However, a more lengthened experience of it might prove its value in prolonging the period of anæsthesia from nitrous oxide, and be found better than the combination with ether.

STUDENTS' SOCIETY.
THE DENTAL HOSPITAL OF LONDON.

Ordinary General Meeting, held Monday, February 11th, 1889, at 7 p.m. W. HERN, Esq., *President,* in the Chair.

The minutes of the previous meeting were read and confirmed.

Messrs. Phillips and Reading signed the obligation book, and were admitted to membership by the President.

The Secretary read a letter of acknowledgment and friendly greeting from Mr. L. S. Rosenthiel, Secretary of the Students' Society of the New York College of Dentistry.

The President announced that the Council had decided that "Readers of papers may have their diagrams printed in the Transactions at the cost of the Society, up to the amount of 5/-, provided these same diagrams be shown at the meeting when the paper is read; that they illustrate points in the paper; and are, in the opinion of the Council of sufficient merit to warrant their being printed." He further announced that finished reduced copies of these diagrams must be handed to the Secretary before the night on which the paper is read; and that members could at their own cost insert more diagrams than the above amount would pay for.

On Casual Communications being called, Mr. Rouw presented a first temporary molar with the crown of the succeeding bicuspid between its fangs, both having been extracted together.

Mr. Forsyth presented a model of the lower maxilla of a boy, aged 13, one wisdom tooth was already in situ, that of the opposite side being in process of eruption. The boy had cut his first permanent molars before he was four years old.

Mr. Smith presented a lower molar with a piece of alveolus adherent. An unsuccessful attempt had been made to remove it on a Friday by a practitioner, on the following Monday he had succeeded in breaking off the crown, and three weeks later, after some inflammation the roots had been readily removed under gas.

Mr. Smith also showed an old style pivot still firm in the root, which had been cast off. The pivot was fixed with wool and mastick, and had been worn 27 years.

Mr. Day presented a model showing 5 lower incisors, and also an abnormally large lower incisor.

Mr. Cohen brought forward a model of the upper jaw of a lady aged 22, showing congenital absence of both lateral incisors. There was no family history.

The President then called on Mr. M. Woolf for his paper on "The Adaptation of Gold and Richmond crowns." [see page 229.]

Mr. Woolf having taken his seat, a lively discussion ensued.

The President advocated the use of steel dies, as they were always ready for use. He thought the cusps were usually too pointed, and personally rounded them off somewhat on the lathe. He pointed out that in grinding down the collar of a gold crown after it is adjusted it was very liable to collapse, this difficulty he overcame by previously filling the collar with Stent's composition, and grinding down Stent and collar together.

Mr. S. Read asked if the standard mentioned was the American Standard. He had obtained the contour of the crown by building up a tooth in wax, and taking a zinc cast of that.

Mr. Dolamore thought in a carefully adjusted crown the root was more likely to fail from periosteal mischief, than from its decaying, and he believed the collar of the Richmond crown, would tend rather to cause irritation, and so to expedite this. He urged that gold crowns should not, out of consideration for the pockets of the patients, be applied to other than healthy and durable roots.

Mr. H. Lloyd Williams mentioned that arrangements were being made to give students more facility for making gold crowns in the mechanical laboratory of the Hospital. He thought it better to use two different kinds of solder, seeing that soldering had to be done at different stages. He objected to the Richmond crown on account of the gold band in front being liable to show. To obviate this he cut the band away in front, only letting it go three quarters of the way round.

Mr. Rilot objected to the term Richmond crown, on the same ground that he did to "Pyorrhœa Alveolaris" being called Rigg's disease. He would prefer calling them Porcelain-faced gold crowns. He believed that splitting of the porcelain face occurred more frequently than Mr. Woolf seemed to suppose. To, in a measure, prevent this, he advocated carrying the gold right up to the cutting edge, and leaving it fairly thick there.

Mr. Smith objected to the statement that gold crown work would form a leading feature of future dental practice. He thought that as patients grew more enlightened they would come to the dentist before the mischief had gone far enough to make crown work necessary. He would like to know if the soldering could be done with an ordinary blow pipe, or if the Nitrous Oxide blow-pipe was essential.

Mr. Dunlop asked how Mr. Woolf would repair a Richmond Crown, of which the porcelain front was fractured.

Mr. Harsant described a new apparatus for quickly taking a metal cast of a root.

Mr. Preedy mentioned that solid gold cusps and crowns could be obtained at the Depôts.

Mr. Knowles thought the term "Richmond Crown," as used in this connection was erroneous. He had always heard it applied to a porcelain crown with a square pin attached. He objected to the caps sold at the Depôts on the score of expense.

In reply Mr. Woolf said that he had confined himself to a description of the methods he personally employed. He then replied to the various speakers.

After according the usual vote of thanks to Mr. Woolf for his paper, and to the gentlemen who had brought forward Casual Communications for so doing, the President announced that the next meeting would be on Monday, March 11th, when Mr. Cohen would read a paper on "Neuralgia."

The proceedings then terminated.

GLASGOW DENTAL HOSPITAL.

The Annual Meeting in connection with the Glasgow Dental Hospital was held in the institution, George Square. Lord Provost Sir James King, Bart., presided.

The Secretary (Mr. D. M. Alexander) submitted the fourth annual report of the Committee of Management. This stated.

They had to note with satisfaction evidence of the growing usefulness of the institution in the increased number of patients who had taken advantage of it during the year. Though the increase was not very great it was sufficient, by comparison with previous years, to show that the hospital was every year being more appreciated by the poor people for whom it was instituted. The number of patients recorded in previous reports had been as follows :—1885 (covering nine months), 3875 ; 1886, 6825 ; 1887, 9242 ; while for this year it has reached 8267. During the year the highest monthly record had been reached, the number of patients during October having been 816, or a daily average of over 31 patients. The number of operations during the year had been 8481. With regard to the finances of the hospital, the committee had very much to regret that these were not in a satisfactory condition. The income for the year 1887 was sufficient practically to meet the expenditure, the accounts closing with a small deficit of 8s. 2d. It was pointed out by the directors, however, that this was accomplished by an increase in the amount of the students' fees during the year, arising from the increased number of students, but that this source of income would not be available during 1888, as the fees paid by the students covered two years' attendance at the hospital. This anticipation of the directors had unfortunately been realised, as the amount received for students' fees during the year had only amounted to £28 7s. as compared with £117 12s. for the previous year. The committee hoped that this deficiency might be met by an increase in the amount of the contributions by the public, but they regretted that this hope had not been fulfilled. The subscriptions during the year had only amounted to £97 14s. as compared with £107 15s. for the previous year. The result was a deficiency in the year's accounts of £92 14s. 9d. This was very disappointing to the committee, and they ventured to make another appeal to the community for more adequate support for the valuable work being done by the hospital. A sum of £250 per annum was all that was required. The community in other large towns, such as London, Liverpool and Edinburgh, recognised the maintenance of such an institution as a duty incumbent on them, and the Dental Hospitals in these towns were well supported.

Sir James King said he had great pleasure in moving the adoption of the annual report.

Mr. J. G. A. Baird, M.P., seconded and the report was adopted.

Dental News.

LEGAL INTELLIGENCE.

Action by a Dublin Dentist.

This was an action brought by Mr. Michael F. H. Brickell, surgeon-dentist, of 46 Dawson street, for £26, price of a set of upper and lower teeth with gold plate, gold swivels, and gold springs, supplied to the late Mr. George Armstrong, of 8 Pembroke-road, and Florence-villa, Loughlinstown. The action was against Miss M. E. Johnston and Mr. William Armstrong, executors of the deceased.

Mr. Corvan (instructed by Mr. Corcoran) appeared for the plaintiff; and Mr. Samuels (instructed by Mr. Fitzgerald) for the defendants.

Mr. Brickell deposed that on the 12th April, 1888, he supplied the teeth to Mr. Armstrong, who agreed to pay £26 for them. Mr. Armstrong died suddenly soon afterwards.

In reply to Mr. Samuels the witness said that he had previously stated that the teeth were supplied on the 9th of April, but that was a mistake.

The Recorder said that £26 was rather a smart price for a set of teeth. He happened to know something about the matter. The best Dublin dentists did not charge so highly.

The plaintiff further stated that Mr. Armstrong was about sixty years of age. There were about twenty-two teeth in the new set. As for natural teeth, he had only four or five in the lower jaw.

Miss Brickell, sister of the plaintiff, deposed that when Mr. Armstrong got the teeth she heard him say he was very well pleased with them, and would recommend Mr. Brickell to all his friends.

On behalf of the defendants, Miss Johnson, niece of the deceased, deposed that Mr. Armstrong was seventy years of age at the time of his death, which occurred rather suddenly. She remembered Mr. Armstrong stating that he had got the spring of his old teeth repaired by Mr. Brickell, who charged 10s. Mr. Armstrong took the teeth out of his mouth and showed her where the spring had been mended. He did not get a new set of teeth from Mr. Brickell. He said he would wait till he went to Paris, for he preferred the French dentists. He was buried with the old set of teeth.

Mr. Brickell, in reply to the Recorder, said the moulds were broken.

The Recorder said he had a great difficulty in making up his mind on this case. He was not satisfied that the plaintiff's case had been made out. He confessed that the price startled him. The highest class Merrion-square dentists did not charge anything like £26 for a set of teeth.

The case was dismissed without prejudice and without costs.

PROSECUTION UNDER THE DENTISTS' ACT, IN GLASGOW.

Sheriff Balfour had a novel case before him this morning—the first of the kind ever brought up for judgment in Glasgow—in which a young man named James Gray (21), residing at 3 Minerva Street, where he carried on the business of a dentist, was concerned. He displayed a signboard announcing to the world that the "best artificial teeth" might be had within, that patients might have "teeth extracted," and that he was "James Gray, late with B. Sutherland, surgeon-dentist." In respect of respondent not being a qualified dentist, the exhibition of such signboards rendered him liable to penalties under such statutes as the Dentists' Act, 1878; Medical Act, 1886; and Summary Jurisdiction (Scotland) Acts, 1864 and 1881. Under these James Gray was prosecuted at the instance of Mr. S. M. Carrick, it being competent under the first-named Act for any private individual to take up the case. Respondent pleaded guilty, and Mr. Alexander Russell, who acted for him, said he hoped his Lordship would deal as leniently as possible with his client. The respondent had served five years with Mr. Sutherland, whose permission he had to use the words—"Late with B. Sutherland, surgeon-dentist;" and he had also been for thirteen months in the employment of one of the best dentists in the city. He (Mr. Russell) submitted that the public had not suffered in the slightest degree from the action of his client—indeed, he could point to many cases where patients had had their pain alleviated by his skill. The reason for his not being a qualified dentist was the want of means. Mr. Carrick said it was perfectly clear that the whole scope of the Act implied that no person who did not possess the qualification required by the Act could put himself forward as a dentist. The present case was an aggravated one, as the respondent's attention had been called by the Dental Association to the fact that if he continued to display the signboard in question he would be prosecuted for so doing. The sentence was £5, without costs, or 14 days.

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SOME POINTS OF PRACTICAL IMPORTANCE IN THE USE OF AMALGAM.*

By George G. Campion, L.D.S.
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Dental Surgeon, Victoria Dental Hospital, Manchester.

Mr. President and Gentlemen,

I do not propose this evening to consider the subject of amalgams in its entirety. The limited time at my disposal would obviously render abortive any attempt to treat even superficially so wide a subject, involving as it does all the many differences in the composition of these bodies, their physical and chemical properties, the numerous and varied tests to which they have from time to time been subjected, besides the manipulative and other details necessary for their successful use. I wish rather to contribute one or two remarks towards the more strictly practical side of the question; to notice a few of the conditions which must be observed in the employment of these substances if we wish to obtain with them such good results as they are capable of yielding, and thus to open a discussion which shall be of some practical service to us all.

And in the first place, the preparation of cavities for amalgam merits, perhaps, more than a mere passing attention. We are often, I think, a little apt to fancy in every day practice that this is not a point much worth considering, or perhaps, without thinking about it at all, we cut our cavities in very much the same way whether we propose to use gold or amalgam for the filling. And yet some of the properties of amalgam, real or supposed, indicate pretty clearly that cavities must be shaped specially for this material if we would obtain with it even fairly satisfactory results. For instance, one of the properties attributed to amalgam is that known as "spheroiding," a tendency, that is, to approximate somewhat to the form of a sphere, while in the act of, or subsequently to setting. This we know is an universal property of all liquids : we see it conspicuously in the metal mercury ; and it has been thought that it must exist to some small extent also in a plastic mass of which mercury is so large and so important a constituent.

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* A Paper read before the Odontological Society of Manchester.

And if theoretically this be so, and we allow the consideration of this point any practical weight in governing the formation of our cavities, we shall obviously avoid sharp angles, straight walls, and deep fissures ; the cervical edge should be curved, not flat ; the sides slight concavities facing one another, not straight and more or less parallel walls as we use for gold ; and in an ideal case the filling should be retained by a general undercutting of the whole cavity, making the interior larger than the orifice, rather than by retaining grooves and pits cut into the substance of the dentine.

Some experiments made by Sir John Tomes, and published in 1861, prove the difficulty of forcing amalgam properly into fine fissures, and small out-of-the-way places in a cavity. He prepared thin slips of ivory, each perforated through its centre by a cylindrical hole, and when about to be used clamped down on a flat block of ivory so as to convert the perforation into a cylindrical cavity with a flat floor at right angles to its walls. On the under surface of the slide several minute angular fissures were cut with a small four-angled file into the edge of the cavity wall. Packing cavities thus prepared with many different amalgams, he found that in all cases the mass failed to fill the fissures cut to test the power of penetration. These experiments, which were fully described before the Odontological Society of Great Britain, show clearly that all such minute pits and depressions in out-of-the-way places must be avoided if the filling is to be perfectly adapted to, or even in reasonably close contact with the walls of the cavity.

I have here a slide prepared in the way described, illustrating Sir John Tomes mode of experimenting, and showing something of the general results to be obtained.

Another point of great practical importance in shaping cavities for amalgam is to avoid anything like a bevel on the edge of the cavity wall. In gold filling, particularly in contour work, it is often desirable, or even necessary, to chamfer the edges well away, and pack the gold solidly over them; but where this is done in using amalgam, resulting as it does in a thin feather edge in the filling, leakage almost certainly takes place somewhere. This has been shown in repeated experiments by Mr. Charles Tomes, Dr. St. George Elliot and others.

But a feather edge may be objectionable on another ground. For instance, in smoothing off an amalgam filling in a crown cavity nothing is more likely than that a thin edge of amalgam may be left here and there overlapping the enamel, particularly should the margin of the cavity be in the least bevelled. In a little time the force of mastication will chip off parts of the edge, leaving the filling standing up above the walls, and forming a groove where small particles of fermentable substances may lodge and ultimately cause further decay. Again and again we see fillings standing above the cavity margins in this way, and this has been at times erroneously thought to be an indication of expansion of the amalgam. The foregoing explanation of the appearance was first suggested, I believe, by Mr. Charles Tomes, in 1871, but it does not cover, nor account for those cases where this raising of the margin of the filling happens against the approximal walls of interstitial cavities.

A very striking case of this kind came under my notice recently in the mouth of a patient. I had filled the distal surfaces of the first and second right upper bicuspids, not on the same day, but certainly within a month of each other, and on looking at them on a subsequent visit I found the edges of the filling in the second bicuspid perfectly adapted to the cavity walls, so that one could pass a probe from enamel to filling with hardly a perceptible catch. The contrast between this and the first bicuspid was very great, for in the latter, at the palatine margin, which was the one most readily presenting itself for examination, the amalgam stood off from the enamel, leaving a quite perceptible space between the two, into which the point of a fine probe could be easily inserted. The fillings were both made with the same amalgam, which, so far as I can remember, was in both cases mixed to about the same degree of plasticity, and inserted in very much the same way. I was at the time quite at a loss how to account for the appearance. It seemed at first sight to be evidence of a presumable uncertainty attending the use of amalgam generally, and of the impossibility of obtaining with it results of anything like a constant kind. But this would, no doubt, seem to many to be less an explanation of the appearance than a confession of the want of one; and although I cannot be in any way sure that I now know more than before as to what were the actual conditions which resulted in the failure, I have, I think, an idea as to what may perhaps have been the cause or causes of this alteration in shape. Here are two specimens of fillings showing something not unlike the appearance presented in the mouth. In one the filling is well adapted to the cavity wall; in the other it stands off enough to show a slight crevice between the two. In the first case the cavity had a straight not a bevelled edge, it was kept dry during the insertion of the amalgam, and care was taken to allow no excess of mercury to remain at the edge of the filling when completed. In the other specimen the opposite conditions obtained; the edges of the cavity were bevelled, the amalgam was packed in the presence of moisture, and an excess of mercury remained at the edges of the filling, and was not removed on finishing.

I do not, however, attach much importance to these specimens; isolated cases like these prove nothing, but they do, I think, suggest that an explanation may be found rather in the shape of the cavity and mode of inserting the filling than in any intrinsic property of the amalgam itself; and they may also give us a useful hint that when we feel inclined to be dissatisfied with the working of any given alloy, it may be well for us to make sure before discarding it for another that it is really the filling which is at fault, and that we are not laying on the material, blame which should more justly be given to the operator.

This brings us naturally to the packing of the filling, and although it is probably true that each amalgam has its peculiarities which require to be ascertained and dealt with by working it in that particular way which is most suitable for it, yet it is possible, I think, to state one or two principles as to the packing of amalgam generally. In the first place a great deal of the questioning as to the desirableness of much or little mercury has been ended by the good results obtainable by a method introduced by Dr. Bonwill, of Philadelphia. He uses the amalgam in a thoroughly plastic condition, and putting a little into the cavity places on it a pad of bibulous paper on which he presses forcibly with a blunt ended steel instrument, squeezing out all excess of mercury, and leaving the amalgam hard and dry at the bottom of the cavity. More amalgam is then inserted and condensed in the same way, and the process repeated till the cavity is full, when the last traces of superfluous mercury are squeezed out by an instrument (shown) consisting of a pad of soft rubber projecting from a metal ferule fixed to a handle. Great pressure is exerted with this instrument through a pad of bibulous paper till the excess of surface mercury is all expelled, leaving the amalgam firm and hard, and in a condition to be easily trimmed and shaped with steel instruments without fear of disturbing it. He claims that used in this way you get more perfect adaptation of the filling to the cavity walls, and obviate all or most of the alteration in form which takes place during, or subsequently to its setting.

I have here a number ot tubes showing the difference in amount of leakage when packed by the ordinary, and by Bonwill's method. Three different kinds of amalgam have been used, and I have labelled them respectively, A. B. C. In the tubes labelled A, the difference between the two methods of packing is very striking: those packed in the ordinary way have leaked badly, while in those inserted by the Bonwill method, the leakage is insignificant or altogether absent. In the tubes marked B, the result is the same in kind, though the difference is very much less marked, while in C, there is still less to choose between the two sets of tubes, though on the whole those packed in Bonwill's way show less leakage than the others. Here is a fourth set of tubes which were packed (half of them in the ordinary way, and half by Bonwill's method) with moisture present, and the result shows a decided advantage for the Bonwill method, though it will be noticed that in neither series are the fillings so perfect as those from which moisture has been excluded during packing.

These results seem to show clearly that under these conditions better results are obtained by Bonwill's than by the ordinary method of packing, and that the most perfect fillings can only be made when moisture is entirely excluded. But an obvious objection will at once occur to every one, the objection, viz., that these specimens cannot be regarded as any criterion of the results obtainable under the wholly different conditions one has to work under when inserting fillings in the mouth. In the first place, the fillings are all, so to speak, in simple crown cavities ; in the next place, the surface of the tube is perfectly polished, and presents, the most favourable conditions for packing against, and further, the filling can be done on the bench, and the tube held in any position which may be most convenient. I accordingly tried some fillings in blocks of Walrus tooth, and found it almost impossible to obtain a tight filling in them. Mr. Charles Tomes in describing some experiments before the Odontological Society of Great Britain in 1885, stated that he could obtain water-tight fillings in extracted teeth by inserting the amalgam in Bonwill's way in every case except where there was a chamfered edge. My attempts, however, were for some time altogether unsuccessful, as you will see by the specimens passed round, and I only succeeded at last in getting one filling which showed any approach to being water-tight. The fillings were tested in Draper's Dichroic ink, which has the reputation of being more penetrating than any other for experiments of this kind, and each block was dropped into it immediately after the filling was inserted. The explanation of these failures is, I think, to be found in the texture of the bone used, which is coarser and less hard than human dentine, owing to which the sides of the cavities were rougher than would have been the case in human teeth ; and the amalgam being unable to accommodate itself to the slight irregularities in them, allowed the ink to find its way down by capillary attraction. The possibility of this happening to the impairment of the filling—for amalgam seems to contract, or at least alter in shape more when setting in the presence of moisture than when dry—was first pointed out by Mr. Thos. Fletcher, whose work and experiments on amalgams are well known. I found that the difficulty could be overcome by coating the cavity walls with a thin layer of copal ether varnish, and allowing this to dry well before filling. Successful results were then obtained as you will see by the specimens I handed round. The conclusion to be drawn from those experiments is that the sides, or at least the edges of cavities should be smoothly cut with a finishing burr, or a hard varnish used to fill up any tiny irregularities which may exist, and which may else remain and impair the quality of the filling by permitting leakage before the amalgam has set.

Before leaving the subject of packing amalgam, it is necessary to allude to a paper by Mr. Amos Kirby, of Bedford, read before the British Dental Association at Dublin in August last. His experiments seem to have proved that for many days after a filling has set any mercury which may be in excess at one part is gradually transferred to another till it is evenly distributed through the entire mass, and it seems probable that it is this transference of mercury from one part of a filling to another, which causes the greater part of the alteration in shape. Basing his method of packing on this hypothesis, Mr. Kirby fills the first part of the cavity with plastic, and finishes the filling with very dry amalgam ; the reason for using the latter being that it may absorb the excess of mercury which is by packing pressed to the surface of the amalgam first introduced, and thus render the mercury, at the completion of the filling, as evenly distributed through the entire mass as possible. In this way he claims to be able to make fillings which prove water-tight under a pressure of 4 or 5 lbs. to the square inch.

Dismissing now the packing and manipulation of amalgam, let us consider for a moment, that troublesome, but too frequent class of cases, where, with perhaps but a small opening in the enamel, we find the dentine so widely and deeply softened as to render exposure of the pulp certain if we attempt any very thorough excavation. The tooth perhaps has not ached, not given any sign of pulp irritation, and in these cases it is now an accepted principle that the softened dentine covering the pulp may be allowed to remain. But how is such a cavity to be treated ? Are we to fill with an amalgam like Sullivan, which has a marked power of inducing hardening and recalcification of any soft dentine over which it may be placed ? or are we to line the cavity with a white filling before inserting the amalgam ? The former plan is undoubtedly good, and of great value in the six year molars, but the consideration of appearance will prevent its use in the bicuspids and front teeth, as the amount of discolouration under a copper amalgam is always in direct proportion to the softness of the subjacent dentine. Given a tooth of superior density, with the cavity thoroughly excavated, the staining will be slight in amount, or altogether absent, while in one of poor texture, or where decalcified dentine has been left, it may be so great as to discolour the whole tooth. In the bicuspids and front teeth then a lining of white filling seems undoubtedly indicated prior to the insertion of the amalgam, and personally I shall be glad to hear from the members present of their success or otherwise with the different white cements used for this purpose. My own practice has oscillated from the double phosphate of zinc and alumina, known as Fossiline to oxychloride, and from the latter back to Fossiline again, with occasionally a layer of oxysulphate (Fletcher's artificial dentine) immediately over the pulp. The Fossiline is not very easily worked in these places, but sets rapidly when in position, and usually makes the tooth comfortable at once; while the oxychloride, though delightfully easy to work, and possessing permanent antiseptic properties, causes severe pain at the time of inserting, which may last for an hour or more. This filling, moreover, takes some time to set reasonably hard. I think also, that it has proved in my hands more liable to cause the death of the pulp, though of this I am not sure. But whichever kind of lining be used, a most important point is that the cavity be thoroughly dried. The softened dentine is like a sponge, and no amount of surface drying with absorbents will suffice; the moisture must be removed from the substance of the softened tissue if a tight joint is to be formed and further decay prevented, and this can only be effected by a current of dry warm air.

Before closing, I wish to say a word about the combination of amalgam and gold in one filling at the same sitting. Its employment in this way was first suggested to me about 12 months ago by Mr. T. E. King, of York, who has used it for some years in his practice, with, I understand, continually increasing satisfaction. It seems at first sight so utterly contrary to all one's previous conceptions of the working properties of both gold and amalgam that one is, perhaps, a little inclined to be sceptical as to the desirability, or even possibility, of combining them in this way: but the specimens passed round show that the result is a hard, compact mass, without any porosity, such as merely theoretical considerations might lead us to expect, at the junction of the gold and amalgam. The fillings also show well as regards leakage. In one of the blocks shown the ink has been absolutely excluded, and in the other very much less has leaked in than when using amalgam alone under similar circumstances. Of its possible advantages I have now little time to speak, but should mention that Mr. King uses it mostly in crown cavities in molars of soft texture, or when softened dentine has to be left, and reports most favourably of it as a tooth preserver in these cases. A recent writer in the *Dental Cosmos*, Dr. D. M. Clapp, advocates a similar combination of the two materials. He uses the amalgam as a guard for the cervical edges of approximal gold fillings on the ground that in the experience of many operators gold fillings which have failed at the cervical edge and been patched there with amalgam last longer than the fillings made entirely of gold as originally introduced. I have used the combination occasionally during the last six months, but neither long enough nor often enough to have been able to form any very definite opinion as to its value.

To sum up now the conclusions arrived at on the few points we have considered.

In the use of amalgam the cavities should have a general undercut, the interior being larger than the orifice ; angles and straight walls should be avoided when possible ; no bevelled edges are permissible ; and the cavity margins must be smoothly finished with keen and finely cut burs.

The best results are obtained by Bonwill's method of packing, or by taking measures to ensure, so far as possible, that when the filling is finished the mercury in it shall be evenly distributed through the entire mass.

Coating the cavity walls with a hard varnish is probably of use by filling up any microscopical irregularities in them, and so preventing leakage by capillary attraction while the amalgam is setting.

Moisture must be rigidly excluded by the rubber dam or otherwise, though this is probably not essential when using copper amalgam.

In cavities where softened dentine must be left amalgam may be used with or without a lining of oxychloride or other white cement, but in the former case the softened bone must be thoroughly dried by warm air in order that the joint between it and the lining may be tight and leakage prevented.

Experience may probably show at some future time that a combination of gold and amalgam is of great use in many cases, both as a tooth preserver, and owing to the greater ease of making watertight fillings in this way than with amalgam alone.

In conclusion, gentlemen, I must ask your indulgence for so incomplete and fragmentary a paper. I am painfully aware how many points I have left entirely unnoticed for want of time, and there are, I doubt not, many more whose importance I do not enough appreciate, or of which, perhaps, I am not even aware. One might instance the use and application of matrices, the combination of different amalgams for particular purposes in the same filling, the guarding of the cervical edge with gutta-percha, and last, but by no means least, the supreme importance of careful trimming and polishing after the filling has set. These points, however, and others, will, I hope, find a place adequate to their importance in the discussion, to which on such a practical subject as this the paper is, of course, only the introduction.

WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

By Dudley Wilmot Buxton, M.D., B.S. Lond.

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(*Continued from page* 262.)

With respect to diseases affecting the respiratory tract, some care is needed to differentiate between conditions which, although dangerous enough in themselves are yet uninfluenced by nitrous oxide inhalation, and those which it is alleged are directly contra-indicated as far as that anæsthetic is concerned.

In laryngeal and tracheal disease. Common tracheal catarrh whether in the dry stage, or after the walls of the passage have become filmed over with mucus offers no impediment to nitrous oxide inhalation. The irritability and soreness of the throat are relieved after one or two inspirations, and the inhalation is continued comfortably. In some cases especially when the dry stage has not passed off there is a tendency tocoug hwhich distresses and frightens the patient as he is unable to differentiate between the real cause of his trouble, the tracheitis and the supposed cause, namely, the nitrous oxide inhalation. The gradual admission of the gas into the bag and the use of a large expiring valve in the face-piece usually obviate this. With some persons the propping apart of the jaws by the employment of a large mouth-gag is enough to excite cough and retching, and this tendency is enhanced when there is any tracheal catarrh. The common sense proceeding of avoiding stretching the mouth pen and maintaining an even gentle flow of gas need hardly be mentioned. Unless the cough is really urgent, it is the best practice not to interrupt the inhalation for it. Ulceration of the epiglottis, or laryngeal mucous membrane have been beneficially treated by daily inhalation of nitrous oxide, and provided we are sure the gas employed is absolutely pure there is no risk attached to pushing the narcosis in such patients until perfect anæsthesia is obtained. In dealing with the larynx it should be mentioned that one observer* speaks of laryngeal spasm as a possible contingency. The case recorded is not one which seems to quite prove that true spasm does occur, since supraglottic closure is spoken of and the details given, point to the existence of several conditions in the patient which at the least might have assisted in producing the respiratory dyspnœa which occurred. As far as we know at present nitrous oxide gas is wholly bland and non-irritating, so that simple spasm of the glottis or supraglottic closure is not likely to occur. At the same time there are other conditions which may occur and which may produce grave impediment to respiration. For under this anæsthetic the tongue may increase greatly in size from venous engorgement and falling somewhat back, since the wide propping open of the mouth always induces more or less depression of the base of the organ, this allows the epiglottidean folds of mucous membrane to approximate and gravely interfere with respiration. Extension of the head on the neck and dragging the tongue out of the mouth will in the large majority of cases rectify this state of affairs.

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* London Dental Record, May 1st. 1888.

In the case of pulmonary and bronchial disease, we are usually required to administer nitrous oxide gas only in subacute or chronic states.

Bronchial catarrh offers no impediment to nitrous oxide inhalation. The possible onset of coughing was dealt with in reference to laryngeal disease.

In Phthisis two complications have been said to arise in connection with nitrous oxide inhalation—hæmorrhage of vomicæ, and increase of the symptoms of nitrous oxide gas narcosis, *i.e.*, jactitation, cyanosis etc., slowing of respiratory rhythm, even after the supply of the anæsthetic has been cut off. With regard to hæmorrhage, it is impossible to believe the occurrence of bleeding after the gas is *propter* rather than *post hoc*. When it occurs it is surely from some vessel so far ulcerated that the determining cause is necessarily slight, a cough, or the unusual distention of the lungs, due to the unconscious deepening of the respiration under nitrous oxide, being sufficient to start it. In phthisis conscious respiration is shallow and rapid, since full inspirations cause pain by reason of dragging upon the adherent pleuræ, and distention of ulcerated cavities, so that nitrous oxide inhalation determines in these cases very unusual forced respiration which mechanically is competent to set up hæmorrhage. As for the deepening of narcosis after cessation of inhalation, I can only say that I have never met with a *bona fide* case of this nature, and can only suppose that when it does occur, it is due to some intercurrent condition such as falling back of the tongue, failure of the heart's action, undue sensitiveness of the medullary centres, conditions which would by preventing the replacement of the nitrous oxide, by common air lead to deepened narcosis.

In the later stages of phthisis, provided the possible occurrence of hœmorrhage is not apprehended, the criterion as to whether or not nitrous oxide inhalation is permissible will hinge upon the general state of the individual's health. If much wasting has occurred and the vitality is very markedly depressed the condition of the heart should be carefully tested as its probable feebleness and the fatty changes likely to have taken place in its muscular tissue, render it a weak point in the patient's condition. It is always advisable to insist upon the recumbent posture in these cases.

In Emphysema with bronchitis we are dealing with very difficult and dangerous conditions. Not only is the elastic recoil of the lungs more or less lost, and so their power of expelling the gas after inhalation is completed greatly impaired, but by the stretching of the blood vessels ramifying over the air cells and the malnutrition of their walls due to interference with their vasa vasorum, but the whole mechanism of respiration is deranged, the extent of inspiration and expiration being reduced almost to the vanishing point.

Coupled with these changes in the pulmonary tissues there is an equally important alteration in the heart muscle resulting in the dilatation and hypertrophy of that organ. Nitrous oxide inhalation for persons suffering from advanced emphysema, is certainly not free from risk, and should only be determined upon after due consideration of the particular case. It is extremely necessary to judge each case upon its own merits, for some persons, although highly emphysematous, take nitrous oxide extremely well, whilst others whose lung condition might seem far less urgent are very injuriously affected by the inhalation.

Before closing this portion of the subject it may be well to mention that there are cases of abnormalities about the faucial or laryngeal apertures which unless recognised and guarded against, may give rise to alarming symptoms of respiratory distress. Thus hypertrophied tonsils especially if associated, as is commonly the case, with post nasal adenoids and an enlarged pendulous uvula, will under nitrous oxide become congested, and fill up all the faucial arch, so occluding the buccal air-way, while the nose remains blocked by the adenoid.

Again, a displaced nasal septum may by closing the nostril or nostrils, materially impede respiration. Intra-laryngeal growths when small are "managed," so to speak, by those afflicted by them, and may under ordinary conditions give rise to little trouble. When, however, these patients become partly narcotised, the growth swells up and is liable to get in the air-way, and cause considerable dyspnœa.

To be continued.

INAUGURAL ADDRESS.

Before the Odontological Society of Great Britain, Feb. 1889.

By Henry Sewill, Esq., M.R.C.S., L.D.S.

Concluded from page 242.

It was once the fashion of a certain class of writers to denounce the use of amalgams as a species of malpraxis approaching crime; and dire were the injurious effects ascribed to these substances. These prejudices were based upon impressions which had no scientific foundation, and it is not necessary to again expose their falsity. An ideal filling would, however, not be metallic. It would be a cement which, applicable in a condition thoroughly plastic and adhesive to the walls of the cavity, would, on setting, approximate in its character to dense enamel. The advances which have been made in the preparation of non-metallic cements go to show that it is not beyond the power of chemistry to produce such a material.

Simple caries and the operation of filling by which it is treated are peculiar; there is nothing quite like them in general pathology and surgery; but when we turn to the inflammatory conditions occurring within and around the teeth we tread more common ground; for the processes of inflammation, modified only by the anatomical peculiarities of the part, are essentially the same in all vascular structures. In the case of the teeth we have such facts to consider as that the pulp is confined within the rigid walls of a chamber which allows neither of swelling, nor of the escape of exudations; that lesions of the hard tissues are incapable of natural repair; that an exposed pulp does not tend to heal and cicatrize, and therefore, if it is to be preserved, needs to be hermetically sealed beneath an artificial covering. Except in cases where the cavity is readily accessible and bounded by strong walls of sound tissue, it seems questionable whether it may not be better to destroy a diseased pulp and extirpate it rather than attempt to save it, seeing how easily the operation may be performed, and how well the teeth endure after antiseptic treatment.

A disease which seems greatly on the increase at the present day, and which is the sole existing opprobrium of dentistry, calls urgently for investigation. Of its etiology and pathology we are almost completely ignorant, and its treatment is proportionally unsatisfactory. I allude to the malady which consists of slow wasting of the sockets, and loosening and shedding of the teeth, and which is commonly designated *pyorhœa alveolaris.* I have formed the opinion that cases of this affection may be grouped into three classes, and that they are closely analogous to varieties of diseases of the hair commonly classed under the term "baldness."

In one variety, there is little or no inflammation or discharge until the final stage; and the cases occur mostly in robust healthy individuals, although very often of the gouty diathesis, and with massive well-formed jaws and teeth free from caries. These cases are like those of simple premature baldness. In a second group there is present either general debility, or one or another of the dyscrasiæ such as are so often associated with alopecia. A third class of cases resembles sycosis—although I do not suggest that their etiology is identical—and these are the cases of true *pyorrhœa alveolaris.* I have long made this comparison between this disease and affections of the hair, and I was much interested to learn lately that a similar analogy had been drawn by Mr. Jonathan Hutchinson.

Among other topics worthy of full discussion to which I am tempted to refer, but to which time allows me only to allude, antisepticism as applied in dental surgery might well occupy a lengthy essay. I must not, however, pass beyond my purpose, which is to suggest how extensive are the fields for our labour.

Dentistry does not, like general surgery involve direct issues of life and death, but, nevertheless, the theories at the base of each are identical. The art of surgery was for ages founded in greater part on empirical knowledge, that is, knowledge derived solely from experience, and neither explicable nor verifiable by the imperfect science of the day.

That error should flourish, and that progress under such conditions should be halting and uncertain, need excite no wonder. We all, on the other hand, can review the epoch-making discoveries— the outcome of true knowledge—by which, from time to time, long and sure strides in advance were made possible. Indeed, the history of the healing art in every department, and not much less in dentistry than elsewhere, brings out in bright relief the fact that practice can have little permanent growth unless based upon the sure foundation of demonstrated truth ; and can advance only with the general advance of natural science. Never was the prospect of improvement more hopeful than it is now, and in view of the wonderful progress which has been made within our own times in the investigation of every class of natural phenomena, it cannot be believed that any of the problems in dental science which remain unexplained will continue for ever insolvable. It would be rash indeed to ascribe limitations in any direction to future scientific achievement. For instance, we ourselves have seen chemistry advance by rapid steps to a position in which the growing wonders of synthesis no longer surprise us, so that we are prepared to take as a matter of course the artificial production in the laboratory of any definite chemical compound found in the organic world.

In physiology we have witnessed, as a crowning marvel, localisation of the functions of the brain and almost complete unravelment of that tangled web, the nervous system.

In etiology and pathology the study of micro-organisms has been surely leading to great results, and the fundamental fact has been established that the process of fermentation and putrefaction, which were formerly looked upon as of purely chemical character, are essentially connected with certain low forms of organisms.

These discoveries in their turn have led to the science of bacteriology, which has made of surgery a modern miracle. Passing from the time when such operations as trephining and abdominal section were very frequently fatal, we have seen arrive the day when the surgeon, almost certain of the result, no longer hesitates to act, because of the intrinsic danger of any operation, and when he does not shrink from opening the cranial cavity and searching for and removing the cause of disease from within the substance of the brain itself.

Science, by which alone such achievements have been made facile, can advance only by means of observation and experiment; but observation and experiment must be exact; the record of mere impressions, unverified by instruments of precision, by balance, thermometer, microscope, and test-tube, are, as a rule, worse than worthless. He who in the investigation of phenomena accepts the evidence of his unaided senses, can never form a true conception of the nature of things. No sense, for instance, is more easily deceived than sight, and to trust to that alone is to believe in a host of falsehoods, among which that the sun revolves around the earth will be far from the most preposterous. Healthy scepticism is the only safe habitude for the scientific intellect; it is that which every scientific explorer, worthy the name, cultivates within himself and expects to find in others. There is no shame in occasional error. The pithy phrase in the American Minister's farewell speech at the Mansion house a few days ago, applies as forcibly to the pursuit of science as to any work of life—"the man who make no mistakes does not usually make anything."

In the promotion of scientific progress, exposure of old error thus stands in importance second only to demonstration of new truth; and, therefore, workers who may find it difficult to take up a fresh line of research may yet perform good service by examining the facts and theories of others, and subjecting their statements to searching criticism and discussion. If the future of biological science is full of promise, it is mainly because every new statement is forthwith submitted to examination; progress was formerly long delayed for want of careful sifting of the evidence on which generalisations were formulated, and because the testimony of a great authority was often accepted without doubt or question.

For great results, such as I have exemplified, science must not be pursued in a spirit of narrow utilitarianism. The worker must not be perpetually asking what is the practical good of this or that fact; to elicit for truth's sake must be his main desire, and he must be satisfied by the reflection that there never was yet established a single fact, useless and isolated as it might at first appear, which did not in the end fall into its place as an indispensable atom in the sum of knowledge upon which advancement depends. The cultivation of science in this the only fruitful way calls for devotion and self-sacrifice; in any worldly sense it is rarely remunerative, and seldom brings, at least in this country, either applause or popularity. Indeed, until quite recent years, it would have been impossible to refute the allegation that the people of this nation were, compared to the French and Germans, grossly unappreciative of the value of science; and it must seem scarcely credible to the rising generation that it is only within the last decade or two that science has been afforded a place in our general educational system, and has secured the position to which it is entitled in our ancient Universities.

Scientific research can rarely be done to order; no superlatively great work in science, art, or literature was ever produced under such conditions. Great genius can neither be tempted by wealth nor turned from its bent by anything short of starvation and death. How many martyrs to science the years produce—men whose lives are silently given up and sacrificed in the service of humanity—the world knows not, and seems to care not. That some do so perish is beyond a doubt; but it is indeed difficult to suggest a remedy, almost impossible to conceive a scheme, not entirely Utopian, whereby developing genius might be recognised, and, being recognised might be cared for and guarded at the public charge. Nothing for example, more clearly comes out in the biography of Darwin than the fact that had he not possessed resources which not only placed him beyond the reach of want, but enabled him to husband his feeble strength and concentrate all his powers on the gigantic tasks which he set himself to perform, the world would not have been enriched by more than a fragment of the store of knowledge which he at last bequeathed.

It is impossible to make the great body of the people understand the purpose or utility of abstract science, or to recognise merit in those who labour at it. They cannot comprehend the object of a life devoted to accumulation of facts which seem to have no relation to any utilitarian purpose. It would be pretty safe to affirm that whilst thousands might be found who would regard as somewhat of a hero the proprietor of a quack medicine—the possessor of wealth which is the spoil of systematic falsehood and fraud—it would be impossible to find many individuals in any class of society acquainted with the names, much less the work, of contemporary men of science upon the accomplishments of whose tasks the world's forward movement depends. Whilst, however, genius of the highest order is very rare, talent and industry are comparatively common, and the question how best to help investigators to pursue lines of research for which they may have displayed fitness is at length assuming more and more prominence. The question will probably be solved by the methods already started, namely, endowment of research by individuals and institutions, to be followed, when public opinion demands it, by the State. We may trust that the day is not far distant when this Society and its kindred institution, the British Dental Association, shall find it possible to take part in these beneficent projects. In the meantime, although foolish legislation may hamper investigation, and labourers be discouraged by the world's ingratitude and neglect, there is no need to fear that the good work will be checked, or that less will be accomplished now than in the past when difficulties were even greater. Since culture first existed among the British race there never was a time when some of the foremost intellects of the whole world, in every department of thought were not numbered among the inhabitants of these islands ; and there never was a time when crowds of eager helpers were not forthcoming. It seems to me a matter for congratulation, that so long as dentistry has held a place as a profession in this country, it has always included in its ranks a due proportion of men of general scientific reputation ; and that, beside those among us to-day whom we all know as deserving distinction, we claim among the limited numbers of this Society not less than three members whose labours have gained for them the most coveted of all similar honours—the best testimony in the world to the true value of their work—the Fellowship of the Royal Society. Those who have entered our Profession and joined our Society at the present time possess advantages for acquiring knowledge and for pursuing science greater than ever existed. We know they are animated by the same spirit that possessed those toilers after truth to whose example I have referred. Let me express the hope that some fruits of their labour may be laid before the Society during the session in which it is to be my high honour to occupy the Presidential Chair.

British Journal of Dental Science.

LONDON, APRIL 1st, 1889.

ARE DENTISTS JUSTIFIED IN IMPLANTING NATURAL TEETH?

In the course of an instructive discussion upon implantation of natural teeth conducted by the members of the New Jersey State Dental Society, two very important questions became mooted. It was asked how far can dentists undertake the responsibility of the conduct of an operation the results of which may be very serious indeed, and lead to the most grave if not mortal consequences. Nor is the second question less weighty, it is the extreme peril of implanting into a raw cavity drilled into the jaw a tooth from a strange host, without directing the most scrupulous care to enquire into that individual's state of health, and eliminating the possibility of his tooth being a source of infection to the person in whose jaw it is to be implanted. We are at present quite unable to justify any operation conducted upon the jaws which imply anything like grave risk to the patient, for the results obtained by manipulation have not been particularly reassuring. Drilling into a healthy bone belonging to a healthy person, even when strict antisepticism can be insured, is not free from attendant risks. Periostitis, osteitis, and inflammation extending into the cancellous bone are always possible, and not always remote contingencies in such operations, but when the procedure is undertaken for persons in a weakly state, or for those whose buccal cavity is in an anhygienic condition the risks of such sequelæ are greatly increased. Were untoward consequences to supervene upon a case of implantation it is not unlikely that a jury might regard an operation which incurred grave risks and necessitated the opening up of an absorbent surface both in the soft and bony structures of the mouth as being one beyond the limits of dental surgery proper, and one which should only be undertaken after the greatest care had been taken to avoid danger and risk, and then only if he be prepared to recognise and treat the possibly resulting septicæmia. That there is a risk both of septic toxæmia from the wound, and of infection through the implanted tooth there can be no doubt.

It needs but little thought to realise how easily syphilis and other diseases might be thus conveyed, and so the most terrible consequences arise from a proceeding at best tentative, and by no means certain of success. The precaution which some take of keeping the tooth to be implanted in perchloride of mercury does not in the present state of our knowledge seem to be sufficient to ensure safety. Nor is there much weight in the assurance on which some implanters insist, viz., that none of the cases of implantation have up to the present given rise to severe toxic symptoms, that therefore the danger of any such results following the operation is too remote to need for any serious consideration. It seems to us that the whole procedure is too serious, viewed from the standpoint of possible septic infection, or infection through the implanted tooth, to be lightly undertakon or without a clear and precise explanation having in the first instance been given to the patient, making clear the dangers incurred and the possibility after all of ultimate failure.

THE VOLUNTEER MEDICAL STAFF CORPS.—This useful organisation, which we understand will shortly be raised to the number of 500, is designed to fulfil for the volunteer forces what the Medical Staff Corps does for the Regulars. By its means medical students, and civil surgeons are trained in ambulance and hospital work, and if need be to become volunteer [army] surgeons. Although only existant for four years, this body has done yeoman service on many occasions when great crowds have thronged the thoroughfares, notably on the Jubilee day, the Lord Mayor's day, and during the recent street commotions. Up to the present time the corps have had their head-quarters contiguous to the Charing Cross Hospital, but as they have now to relinquish this, they are compelled to appeal for funds to enable them to obtain a a suitable hall for drill, places of safety for the ambulance waggons, &c., All those who desire to assist in so laudable an object should communicate with Messrs. Holt, Laurie, & Co., Bankers, 17, Whitehall Place, S.W. The adjutant surgeon, W. A. Morris, 26, King William Street, W.C., or the Commandant Surgeon-Major, A. T. Norton, will supply further details. We believe very many of our readers are, or have been volunteers, and we trust they will let Messrs. Holt & Laurie hear from them.

ACCORDING to Dr. Sudduth, the editor of the *International Dental Journal*, rubber dam can be preserved almost indefinitely by oil of cloves.

DISCOLOURATION of the Teeth from the use of Perchloride of Mercury. It is said that a most unsightly change of colour is liable to follow the use of this antiseptic.

THE DISCUSSION UPON ANTISEPTICS.—The Odontological Society would be doing great service if it would more frequently undertake to thresh out some subject of general interest like that which formed the subject of debate at the last meeting. Although Mr. Woodhouse's able opening promised well, all must have felt that much valuable time was lost by vain repetitions from this and that member. Had some set of questions been formulated before the meeting, and every member sent in his reply with the result say of two or three hundred cases treated with this or that antiseptic and this or that method, some really valuable statistics might have been achieved. As it was only two or three substances were mentioned as antiseptics and even these were very scantily discussed and criticised.

OPENING OF THE MEDICO-CHIRURGICAL AND DENTAL COLLEGE, PHILADELPHIA.—A handsome commodious building of which Professor Flagg was the architect, was recently declared open, a most distinguished assemblage being present in honour of the event. Dr. Pancoast in the course of a most happy speech said "the medical students would now have a chance to learn something of dentistry and dental students of medicine." These are the lines upon which Mr. Newland-Pedley runs his Guy's Dental School.

POST-GRADUATE LECTURES ON DENTISTRY FOR MEDICAL MEN.—We are convinced that if our dental schools would do what we think is their duty to do, namely, to teach the public how to preserve their teeth from the decay of disease and the onslaught of quacks and charlatans, they would institute lectures, made easy for their audience, teaching *bona-fide* medical practitioners the A. B. C. of dental hygiene, surgery and medicine. Whilst we are all striving to civilise the remote barbarians of Africa, we take little heed to carry the gospel of health into the homes and hearths of the deserving poor of our own land.

BENZOIC SULPHIDE OF SODIUM AS AN ANTISEPTIC.—Benzoic sulphide of sodium, is prepared by dissolving a large quantity of benzoic acid in a concentrated solution of sulphide of sodium. This preparation is perfectly harmless, even when given in large doses. It is easily soluble in water, and contains the antiseptic properties of its two principal constituents. According to the experiments of Häckel and other surgeons, it is a most valuable dressing for wounds, when used as a wash or upon a bandage : 60 to 75 grains of the preparation are used to every quart of water. Its antiseptic properties are very active and promote healing. Häckel considers it to be equal to carbolic acid, and superior both to sublimate and iodoform, as it is not poisonous, whereas the former is, and because it is free from any disagreeable effects like those of the latter.

Dr. Cunningham's Popular Lectures on Dentistry.—We publish in a letter from Dr. Cunningham an account of his "holiday tour" among the "slum men, women and children" of our city. We have before expressed a favourable opinion about having popular lectures about dental subjects when properly done. We think they might be multiplied, and we believe they would be were it not for the fear, sometimes we opine, well founded that the lecturing dentist is not wholly free from ulterior aims. It is, then, distinctly a gain when well-known and representative men of culture like Dr. Cunningham can be prevailed upon to fill the lecturer's platform.

The Dose of Cocaine.—In a suggestive discussion in the *New Jersey State Dental Society*, a number of dentists spoke of the very grave consequences, which had in their experience ensued from the indiscriminate use of that drug. It was said that the dose which was found sufficient was one eighth of a grain, and when this failed it was unwise to employ larger doses as there was always fear lest untoward symptoms might follow.

Dentistry for our Four-Footed Friends.—Very many incidents are told about the lower animals who have suffered from dental maladies, and obtained relief by dentistry, and these would fill a most interesting volume. Here isan incident told in *The Archives*—Nellie, a female canine of uncertain age, was in great distress, refusing food, from time to time howling with pain. An examination of her mouth disclosed a loosened molar, which was easily removed by the fingers; this was her first experience with a dentist. About one year after the above incident, I was seated in my room, the door being open, when in walked Nellie, evidently in distress; she advanced quite boldly within a few feet, when her courage failing, she turned aside and went under the bed. I called her to me; she came with fear and trembling. An examination of the mouth showed another loose tooth, which was removed by the fingers. Evidently she remembered her former distress, and knew where to get relief.

WITHDRAWAL OF ADVERTISING DENTISTS' DIPLOMAS.—*The Medical Press and Circular* understands that the Royal College of Surgeons of Ireland has withdrawn the diploma in dentistry granted to Mr. Goy, of Lincoln, for repeated breach of his promise not to advertise. It should be understood that the College deprives its Licentiates of their diplomas not only for advertising, though it expressly prohibits that practice by its by-laws, but it exacts from every applicant for its licence a written declaration that, so long as he shall hold the diploma he will abstain "from advertising or other practice which is considered by the College to be unbecoming," and it is for persistent and wilful violation of this undertaking that the College punishes its diplomate. No such step as withdrawal of diploma can be or ever is taken until opportunity has been afforded to the erring Licentiate to explain, and in no case has the penalty ever been inflicted if the Licentiate were willing to amend and to strictly observe his undertaking in future. Moreover, it is always open to a Licentiate who thinks that he cannot carry on successful practice without advertising to surrender his diploma to the College, after which he is free to do as he pleases.

CURE FOR FRECKLES.—A writer in *Pharm. Zeit.* says that a wash, consisting of equal parts of lactic acid and glycerine, will answer the purpose, and is harmless when applied to the skin.

FROM an exchange we clip.—With a knife-shaped piece of Arkansas stone, you can, in a few minutes, sharpen a dozen burs. When the stone becomes dull, rub it on a piece of fine sand paper, laid flat on a table; in two minutes it is sharp enough to stone more burs.

Abstracts of British & Foreign Journals.

OHIO STATE JOURNAL OF DENTAL SCIENCE

FILLING TEETH WITH EXPOSED OR DEVITALIZED PULP.

By Dr. Frank Overholzer, Loganport, Ind.

The age of the patient is the greatest consideration, in the young patient we find the pulp so near the surface that a small cavity may expose it. Such pulps when found in a healthy condition, are not usually difficult to preserve by the means of capping with some non-irritating cement, or gutta-percha, till a few years later there will be sufficient dentine deposited to protect the pulp, when a permanent filling may be introduced. After maturity the less risk we take on exposed or diseased pulps the fewer are the failures to follow. After the tooth has matured there is less use for the pulp, and the less recuperative power does it seem to possess. To remove at the proper time is for more advantages than to experiment with a diseased and dying pulp, to the detriment of the surrounding parts and discolouration of the teeth before the mischief is discovered. When a matured tooth that has ached is presented for filling and the cause is from exposure of the pulp, the safest course is to devitalize the pulp and fill from root to crown. The exceptions to the rule are too rare for consideration. Neither is pain a criterion, for sometimes teeth seem to flourish with a pulp protruding from its chamber, while other teeth seem to ache when the pulp is not exposed in the least. But, when a matured tooth has ached from exposure, it is rarely safe to attempt its preservation by saving the diseased pulp. When the pulp is exposed and has never ached, it is often still more uncertain. The means of devitalizing the pulp by application of arsenious acid is almost universally used, and it is probably the most satisfactory of our present methods. In proceeding to devitalize a pulp in a diseased and aching condition, the first step should be to relieve the pain for from one to twelve hours before making the application of nerve paste, thus lessening the pain. The pulp should be well uncovered before making the application. Sandarac varnish seems to be the most used to retain the paste in the cavity, but the temporary stopping of gutta-percha serves the purpose more satisfactory, and is less likely to be followed by soreness as it hermetically seals the cavity. From twelve to twenty-four hours is sufficient to devitalize the pulp when the application is in free contact with the tissues. A longer time is sometimes necessary, bnt not generally advantageous. The pulp should be removed if any soreness is felt at the root. The thorough removal of the pulp is of great importance, and should not be attempted through a cramped opening. The tooth should be cut away sufficiently to givo access to the pulp chamber. It is seldom necessary to enlarge the canal, but the access to the canal should be free and as direct as possible. A good soft broach is the safest means of removal ; however the wooden point finds favour with many. After the thorough removal of the pulp, as near as careful manipulation will permit, the root should be syringed freely with water, wiped out with peroxide of hydrogen, dried with hot air syringe, then freely saturated with oil of eucalyptus, dipped in powdered iodoform, the cavity dried once more with hot air syringe and the root canals filled with cement or gutta-percha. The gold or amalgam can now be introduced. Under the head of teeth in which the pulp is found devitalized, the main difference is in the septic condition present. The cavity should be well opened to insure good access to the canals, after which it can be thoroughly disinfected by the use of bichloride of mercury, 1 to 500 ; it disinfects without giving off an odour of its own, sometimes misleading in an aromatic preparation. The peroxide of hydrogen is useful in the same relation. The cavity should then be well formed and the napkins or dam placed in position, dry thoroughly with hot air syringe, saturate cavity and canals with oil of eucalyptus dipt in powdered iodoform, dry once more with hot air syringe, and fill as in first class of root filling. The hot air syringe as a disinfectant and germicide is second to nothing in this class of cavities. The gold or amalgam can then be introduced.

ITEMS OF INTEREST.

CLASPS.

By Dr. W. E. Driscoll, Manatee, Fla.

There seems to be room for little doubt that a very large proportion of dental practitioners fall short of a full appreciation of the use of clasps to retain artificial teeth firmly in position. A clasp must be such in fact : if pressure is brought to bear on one side of a tooth, there must be compensatory support on the opposite side. When a clasp extends along the buccal aspect of a molar or by a bicuspid, and to press the tooth inward, there must be perfect support on the palatal or lingual side by the plate or another clasp, otherwise the tooth will move and the clasp will become useless. A tooth should not be clasped that has lost its antagonist, unless we provide a new antagonist, or the action of the clasps would tend to draw the tooth from the alveolus. Many have become discouraged in their efforts to use clasps because in bell shaped teeth, or teeth that diverge or converge, the clasps, after passing over the grinding surface are loose when the plate passes into position, or where they press only on one side of such teeth—an unsatisfactory condition. To remedy or avoid this result (where teeth are bell shaped or lean in different direction), the clasps must be constructed so that they will press on available points near the grinding surface. Of course there will be points on bell shaped or leaning teeth where the plate cannot touch since the necessary cutting away of material to let it pass over the crowns will leave spaces between the necks of the teeth and the portion of the plate that fits to the gum. It is necessary sometimes to extend the plate on the palatal aspect of a tooth almost to the grinding edge so as to secure support for the tooth while the clasp is pressing on the outside. Where teeth are so shaped that clasps have a tendency to slip off there is always some remedy. In an inferior cuspid, a firm hold may be secured by carrying the clasp around the labial side and displacing the free point of gum extending between the cuspid and lateral incisor. Where a rubber clasp would be exposed to view, one of gold can be made of heavy wire and made to fit so closely to the gum as to scarcely attract attention. Sometimes a few front teeth are to be replaced, and no vacancy exists far enough back among the upper teeth so that clasps will be out of sight. Should there be a loss of lower back teeth then a clasp or two may pass over the grinding surface of the teeth immediately over the vacancy in the lower teeth, and far enough upward on the buccal surfaces to afford strong attachment where the plate might otherwise be very loose. To avoid spreading the teeth apart where the clasp passes to the outside it is best to turn the point of the clasp backward so it will press about the middle of the buccal surface of only one tooth. Here again gold and wire is very appropriate, as it will be less in the way than rubber. But even the latter will be found far better than no clasp. No partial lower set of teeth should ever be made without clasps, though many dentists never use them under any circumstances. The successful use of clasps makes plaster impressions almost a necessity. The "drawing" of flexible material like wax or modelling compound in impressions for partial sets is very confusing and inaccurate. For partial lower sets there is often opportunely presented to rest the plate in a large measure on the remaining natural teeth so as to relieve the unpleasant pressure of the narrow plate on what is often a sensitive lower gum. The posterior half of a tippling molar's grinding surface offers a good "rest" for one end of the plate if clasps support the tooth in a rational way. The depression in the crowns of bicuspids and the slanting lingual surface of inferior cuspids will help to save pressure on the gum if the tooth is supported on the outside with a strong clasp.

Literary Notices and Selections.

THE SUPPRESSION AND SPECIALISATION OF TEETH.

By John Humphreys, L.D.S.I.,
Lecturer on Dental Anatomy and Physiology, Queen's College Birmingham.

(*Continued from page* 118.)

Suppression of Molars.—This is by no means so common as the loss of the premolars, but a glance through the various families may prove interesting.

In ruminants we find the three molars in both jaws constant throughout the group ; but though they are all erupted in the wart hog, the first two are speedily lost, leaving the third, which is of large extent, almost equalling in size the anterior molars and premolars ; and which persists throughout the life of the animal, the sole representative of the premolar and molar series.

The rodents, likewise, are constant to the molar formula, with the exception of the Australian water-rat, whose molar series is reduced to two above and two below, $\frac{2-2}{2-2}$.

The Carnivora offer a wide range for speculation. The amphicyon (Tertiary), a dog-like creature of Eocene times, possessed the full mammalian formula; incisors $\frac{3-3}{3-3}$, canines $\frac{1-1}{1-1}$, premolars $\frac{4-4}{4-4}$, molars $\frac{3-3}{3-3}$. The Canidæ follow this order, but are destitute of the hinder upper molars.

From an examination of 118 dogs' skulls with my colleague, Professor Windle, we have found one, or sometimes both, of the missing molars present, sometimes fully erupted, and at others retained in their crypts in the upper jaw. Subjoined is a list ;—

	RIGHT.	LEFT.
Shepherd-dog	0	1
Pointer	1	1
Bulldog	0	1
Bulldog	1	1
Esquimaux	1	0
Bulldog	0	1
Pug	1	0
Spaniel	1	0
Black-and-tan Cross-bred	1	1
Cross Mastiff and Greyhound ...	1	1
Black-and-tan Cross-bred	1	1

Out of 118 dogs, eleven possessed one or both of the missing upper molars which were found in the amphicyon, five having the two, and six only one of the missing teeth. So large a proportion, I think, must be tolerably conclusive that they indicate a reversion to the type from whence the Canidæ were derived.

Van der Hoeven describes a dog's skull with a pair of supplemental molars in the upper jaws, and Professor Huxley states that they are likewise sometimes found in *Canis Cancrivorus*, in reference to which he states :—Thus it would appear that we have under our eyes in this species another stage in the primitive dentition of the Canidæ, and I think there can be no reasonable doubt that the occasional appearance of an extra molar in domestic dogs is not a monstrosity, but a reversion to the earlier and more complete dentition of the primitive stock of the Canidæ.

Otocyon differs from the other Carnivora in possessing molars $\frac{4-4}{4-4}$, resembling in this instance, Marsupials; from which source Professor Huxley imagines that Carnivorous Mammals have been evolved; but there are instances of a transition state, some skulls of otocyon having only molars $\frac{3-3}{4-4}$, the upper hinder pair being absent. Huxley mentions two skulls of *Canis Cancrivorus* and *Magellancius* in the British Museum, in whose lower jaws a well-formed fourth small molar was present. In examining the lower jaw of the dog the peg-like character of the third molar is very apparent, and being placed in the extreme angle of the jaw it has no opposing tooth to meet it, and serves no purpose in the act of mastication.

In icticyon the dentition is further modified by the suppression of $\frac{-\,-}{\text{M. }3}$, and the reduction of $\frac{\text{M. }2}{-\,-}$.

In domestic dogs, $\frac{-\,-}{\text{M. }3}$ is frequently absent on one or both sides of the jaws, even though the jaws are well-formed, with no tendency to overcrowding of the teeth.

In nasua and procyon the third lower molar is wanting, the series being reduced to $\frac{2-2}{2-2}$.

In the Mustelidæ a still further reduction exists, the upper series being represented by the first molar only, while in the lower the second molar, though present, is quite rudimentary, and exhibits the same characteristics as the dog's third lower molar, being removed beyond the line of contact at the extreme end of the alveolar border, evincing every sign of speedy suppression.

The Felidæ show the most specialised form of dentition by the reduction in their molars to one in each jaw.

Being purely flesh-eaters, they require no rounded teeth in the rear of the jaws, as the omnivorous Carnivora, their limited dentition and blade-like teeth acting as an admirable pair of shears to slice the flesh.

In Primates the molar series is represented by $\frac{3-3}{3-3}$, but a change is taking place under our very eyes in the third molars, or wisdom teeth, of civilised man. These are generally smaller than the preceding teeth, and in the upper jaw are frequently reduced to mere conical pegs, similar to the supernumery teeth so often in the incisive region, bearing every appearance of teeth in process of suppression ; and this fact is not only observable in small and ill-formed jaws, but in mouths where the other teeth are well developed, and there is ample room for eruption. Should they be entirely suppressed in the upper jaw of civilised man of the future, it appears probable that his dentition will be reduced to incisors $\genfrac{}{}{0pt}{}{1-1}{2-2}$, canines $\genfrac{}{}{0pt}{}{1-1}{1-1}$, premolars $\genfrac{}{}{0pt}{}{2-2}{2-2}$, molars $\genfrac{}{}{0pt}{}{2-2}{3-3}$; or, in other words, the loss of the lateral incisors and third upper molars appears imminent. (Cope.)

Eocene Mammals, then, exhibit an advance in their dentition from the older Marsupials of the amphitherium pattern, by a reduction in the several groups of their teeth, the prevailing number being 44, composed of incisors 3, canines 1, premolars 4, molars 3.

Through the different families further reductions have taken place, still more lessening their number.

The suppression as regards the premolars and molars, generally occurs at the anterior portion of the former, and posterior portion of the latter, series.

Suppression is first anticipated by a diminution in size until the tooth is functionless.

These phenomena are still apparently going on throughout the various divisions of the Mammalia.

CARNIVORA.

	UPPER.		*LOWER.*	
Name	*Premolars*	*Molars*	*Premolars*	*Molars*
Octocyon . . .	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Amphicyon . .	1 2 3 4	1 2 3 0	1 2 3 4	1 2 3 0
Cania Carnivorous .	1 2 3 4	1 2 3 0	1 2 3 4	1 2 3 4
Dog, fullest . .	1 2 3 4	1 2 3 0	1 2 3 4	1 2 3 0
„ ordinary . .	1 2 3 4	1 2 0 0	1 2 3 4	1 2 3 0
Cyon . . .	1 2 3 4	1 2 0 0	1 2 3 4	1 2 0 0
Icticyon . . .	1 2 3 4	1 0 0 0	1 2 3 4	1 2 0 0
Civet	1 2 3 4	1 2 0 0	1 2 3 4	1 2 0 0
Mustela . . .	1 2 3 4	1 0 0 0	1 2 3 4	1 2 0 0
Weasel . . .	0 2 3 4	1 0 0 0	0 2 3 4	1 2 0 0

Lutra vulgaris . .	1 2 3 4	1 0 0 0	0 2 3 4	1 2 0 0
Meles Taxus . . .	0 2 3 4	1 0 0 0	1 2 3 4	1 2 0 0
Hyæna . . .	1 2 3 4	1 0 0 0	0 2 3 4	1 0 0 0
Arctitus . . .	0 2 3 4	1 2 0 0	0 2 3 4	1 2 0 0
Felis . . .	0 2 3 4	1 0 0 0	0 0 3 4	1 0 0 0
Machairodus . .	0 0 3 4	1 0 0 0	0 0 3 4	1 0 0 0

UNGULATES.

Name	*Incisors.*	*Canines.*	*Premolars.*	*Molars.*
Anoplotherium .	$\frac{1\ 2\ 3}{1\ 2\ 3}$	$\frac{1}{1}$	$\frac{1\ 2\ 3\ 4}{1\ 2\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Sus scrofa . .	$\frac{1\ 2\ 3}{1\ 2\ 3}$	$\frac{1}{1}$	$\frac{1\ 2\ 3\ 4}{1\ 2\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Sus babiroussa .	$\frac{1\ 2\ 0}{1\ 2\ 3}$	$\frac{1}{1}$	$\frac{0\ 0\ 3\ 4}{0\ 0\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Phacochærus, young	$\frac{1\ 2\ 0}{1\ 2\ 3}$	$\frac{1}{1}$	$\frac{0\ 0\ 3\ 4}{0\ 0\ 0\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Phacochærus, adult	$\frac{0\ 0\ 0}{0\ 0\ 0}$	$\frac{1}{1}$	$\frac{0\ 0\ 0\ 0}{0\ 0\ 0\ 0}$	$\frac{0\ 0\ 3}{0\ 0\ 3}$
Peccari . .	$\frac{1\ 2\ 0}{1\ 2\ 3}$	$\frac{1}{1}$	$\frac{0\ 2\ 3\ 4}{0\ 2\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Hippopotamus .	$\frac{1\ 2\ 0}{1\ 2\ 0}$	$\frac{1}{1}$	$\frac{1\ 2\ 3\ 4}{1\ 2\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Equus . . .	$\frac{1\ 2\ 3}{1\ 2\ 3}$	$\frac{1}{1}$	$\frac{0\ 2\ 3\ 4}{0\ 2\ 3\ 4}$	$\frac{1\ 2\ 0}{1\ 2\ 3}$
Rhinoceros—Himalayan Tertiary	$\frac{1\ 2\ 3}{1\ 2\ 3}$	$\frac{0}{0}$	$\frac{1\ 2\ 3\ 4}{1\ 2\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
R. bicornis . .	$\frac{1\ 2\ 0}{1\ 2\ 0}$	$\frac{0}{0}$	$\frac{1\ 2\ 3\ 4}{1\ 2\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
R. African . .	$\frac{0\ 0\ 0}{0\ 0\ 0}$	$\frac{0}{0}$	$\frac{1\ 2\ 3\ 4}{1\ 2\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Tapir . . .	$\frac{1\ 2\ 3}{1\ 2\ 3}$	$\frac{1}{1}$	$\frac{1\ 2\ 3\ 4}{0\ 2\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Dinotherium .	$\frac{0\ 0\ 0}{1\ 0\ 0}$	$\frac{0}{0}$	$\frac{0\ 0\ 3\ 4}{0\ 0\ 3\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Mastodon . .	$\frac{1\ 0\ 0}{0\ 0\ 0}$	$\frac{0}{0}$	$\frac{0\ 0\ 0\ 4}{0\ 0\ 0\ 4}$	$\frac{1\ 2\ 3}{1\ 2\ 3}$
Elephas . .	$\frac{1\ 0\ 0}{0\ 0\ 0}$	$\frac{0}{0}$	$\frac{0\ 0\ 0\ 0}{0\ 0\ 0\ 0}$	$\frac{1\ 2\ 3\ 4\ 5\ 6}{1\ 2\ 3\ 4\ 5\ 6}$

Review.

Anæsthetics, their Uses and Administration, by Dudley Wilmot Buxton, M.D., B.S., Member of the Royal College of Physicians, Administrator of Anæsthetics in University College, and the London Dental Hospital. 164 pp., H. K. Lewis, London, 1888.

On the publication of this work, we rejoiced to find that the subject of anæsthesia had received, at the hands of Dr. Buxton, the happy combination of Scientific and Clinical attention which it seems to us the subject has for so long urgently required.

It always has been a matter of great surprise that although the rationale of anæsthetisation is very generally misunderstood, and consequently misapplied, its practice is nevertheless commonly entrusted to those who have not given special attention to the subject. It is astonishing, too, how frequently, except in cases of exceptional difficulty, no definite choice of the anæsthetic agent is made, according to the nature of the cases, but rather left to the custom, or favouritism of the administrator, such predilection leaving out of sight the important particular merits of each case upon which, in some instances, everything turns. But surely the fundamental source of the troubles, which notoriously attend the administration of anæsthetics is lack of preliminary thorough education during studentship in their use. At most of the medical schools in London, we believe that on this matter of custom in the choice of the anæsthetic there exists a traditional dictum of "chloroform for infants and the aged, ether for the rest." Although of course, in the main perfectly correct, it is clearly absurd to imagine that until the whole procedure of anæsthetisation is recognised by the qualifying and examining boards as a special subject, substantial progress will be made in this direction.

Possibly few people read the preface of a book, but we commend to the notice of those interested in Medical education, Dr. Buxton's sound observations therein contained, since they concentrate clearly the bearings of the teaching contained in the volume now before us, and especially in the manner just indicated. The elevation of a subject from being a minor feature of medical practice, into a special department, may be considered to begin when its pathology and therapeutics are capable of being analysed and its application consequently provided for by reliable formula and proper prevision. Without seeking to assert that for the purpose of rendering a line of treatment universal, it should be reduced to a formal method of administration, it is still necessary to provide for its successful adoption, it is absolutely essential to lay down certain primary rules for the guidance of those who wish to take it up.

Such rules of great safety are now to hand, and the scientific reasons for their formulation clearly explained in Dr. Buxton's work.

Dr. Buxton commences with a brief, though accurate distribution of the honours appertaining to those who introduced Anæsthesia to medical science.

In connection with this subject, he refers briefly to the unconsciousness to pain produced by hypnotism. Although very difficult of application in this country where racial characteristics and other factors do not lend themselves to the employment of this method, it seems rather a pity that the great convenience of chemical anæsthesia by chloroform and ether should have dismissed it from the further attention of the profession, for there can be no doubt that suitably applied and properly controlled, it affords a pleasant and secure means of anæsthesia.

The disadvantage of the delays attendant upon its employment however, in this country, at any rate completely justifies the author in the present case from entering more fully into its discussion. We cannot let the point pass, however, without quoting the following anecdote, for the accuracy of which we naturally do not vouch, since obviously, that depends upon the personal feelings of the recounter, but we have great pleasure in communicating it to our readers as an instance of alleged indifference, if not insensibility to pain, produced by "suggestion." A distinguished neurologist of our acquaintance, in keeping an appointment with a dentist who was to remove one of his teeth, was, he confessed somewhat dismayed to find that the supply of nitrous oxide had come to an end ; however, having always taken great interest in the doctrine of "suggestion" he, so to speak, felt it a sort of duty to try its effect on himself. To make a long story short, he avers that by dint of repeating to himself incessantly "how delightful" he did not experience any suffering on the extraction of the tooth.

Perhaps almost the best chapter in the book is the second, viz., that on the questions.—What anæsthetic to give, and When to give it. In speaking of anæsthetizing through a tracheal opening, we notice reference made to Trendelenberg's Tampon. Of course the manipulation of this instrument is generally left to the surgeon, since its main object is the prevention of the escape of the blood down the trachea, but still we think that notice might have been added of the very considerable interference it causes frequently to respiration when the india-rubber sack is inflated, namely, an expiratory dyspœna, which usually necessitates the withdrawal or relaxation of the tampon. It has also seemed to us that upon this method (intratracheal) of administration of anæsthetics, more attention should be directed to the direct effect of the anæsthetic upon the capillaries in the wall of the pulmonary alveoli. It is not difficult to produce in the lower animals serious congestion of the pulmonary capillaries by the intratracheal administration of anæsthetics and indeed pulmonary œdema has not infrequently been observed to occur with fatal results. Seeing that the vapour reaches the capillaries directly, without the dose being preliminarily mitigated by transmission through the mouth, pharynx, etc., it is easy to understand how the disadvantageous result should occur, and how that the pneumonia which so often disappoints the surgeon in such cases, though indubitably of septic origin, yet finds a preliminary favouring condition in thecongestion of the alveoli, produced by the chemical irritant. In this respect, ether appears to be more to blame than chloroform, but the whole subject is well worthy of further investigation.

Following the exceeding practical scheme of this work, Dr. Buxton next discusses in successive chapters the special points to be noted in connection with the use of various anæsthetic agents, *i.e.*, impurities of the particular drug, its mode of preparation, its action on the healthy body, the dangers peculiar to its use and the proper mode of administration. All these points are handled in a way which renders the book very easy and valuable as a manual of reference. Prominent among them is the description of nitrous oxide and its employment. Considering that this anæsthetic is probably used several thousand times day by day throughout the world, both by dentists and general surgeons, it is right that it should come first in the series of anæsthetic substances. Dr. Buxton notes fully the changes undergone by the gas in its preparation and storage, and then passes on to discuss its administration. Of its possible lethal power by arrest of respiration there can be no doubt. Those who have seen it pushed too far and excess of administration occurring accidentally synchronously with syncope, know well how the alarming symptoms were only relieved as Dr. Buxton directs by active artificial respiration.

However, such occurrences, to judge by the rarity of their notice in medical journals, must be infinitesimally rare in proportion to the frequency of the administration of the gas. It is gratifying to find that much insistance is laid upon the administration of pure gas alone without concurrent asphyxia. It stands clearly proved now that the untoward symptoms, headache, nausea, &c., sometimes experienced by patients ought never to be attributed to the gas, but to its imperfect administration. Although it would have been agreeable to discuss some of the other facts exhaustively considered in this chapter space will not allow, and therefore we must pass on.

Perhaps of all features of this line of medical practice the chance of accident is the necessarily most prominent factor in causing distrust and anxiety. We are glad to find a chapter reserved for the full discussion of the circumstances under which such accidents occur, and in addition a clear statement of the pathological process involved, and the best means of rapidly relieving the oppressed centres and organs.

The subject of general anæsthesia having been described, the question of the best and safest mode of producing local anæsthesia is next dealt with, and of course cocaine stands first for notice. This is certainly a valuable and instructive chapter, since in a few paragraphs, the author has contrived to convey to his reader a succinct and original account of the physiological action of this drug. Probably all administrators of anæsthetics, and surgeons are now familiar with its powerful depressant effect upon the heart, but this point receives very graphic demonstration on page 132 by tracings of the contraction of the frog's heart when subjected to the influence of a highly dilute solution of cocaine. As regards the practical use of cocaine, we think it should not have been credited with any anæsthetic effect upon the true skin when simply painted on the epidermis. After a long experience we are convinced it has no genuine effect unless injected beneath the cutis. Dr. Buxton's warning respecting the indiscriminate use of cocaine we would most heartily endorse, and indeed would have expressed our sense of danger even more strongly than he has, for a more widely extended experience of its use invariably impresses one with the necessity of care in this direction.

Finally, we may conclude with alluding to Dr. Buxton's remarks on the medico-legal aspect of Anæsthe tisation, and in these he sums up all the points which every one should know to sufficiently guard himself from fraud and black mail. But really the common sense of every practitioner should cause him to remember that in administering an anæsthetic alone, single-handed, he is jeopardising the life of the patient and not merely incurring risk to his reputation. The golden rule of "never giving an anæsthetic alone" would utterly avoid the *contretemps* placed before us in this volume, and of which from time to time replicas appear prominently in the journals.

Sufficient has been said to indicate the general purpose of the work, and it need only be added that probably no one who reads it will fail to realise the value of the instruction it gives, and the merit of the manner in which that instruction has been conveyed.

VICTOR HORSLEY, F.R.S.

Reports of Societies.

THE MANCHESTER ODONTOLOGICAL SOCIETY.

A Meeting of the above Society was held at the Grand Hotel on Tuesday evening, March 5th; Mr. Leopold Dreschfield, L.D.S. President in the chair.

Mr. Collett presented for inspection :—

(*a*) A permanent second molar, which showed excessive absorption on both sides;

(*b*) A small bicuspid with absolutely no root left at all, through absorption;

(*c*) A bicuspid with three roots instead of two, a formation that he thought more common than was supposed.

Mr. G. G. Campion then read a paper on "Some points of practical importance in the use of Amalgam." [page 273].

The President opened the discussion by saying that he had obtained, years ago, good results by mixing gold and amalgam. He took gold foil, cut it into small pieces, mixed it with amalgam and forcibly pressed it into the cavity.

Mr. Headridge said that in preparing cavities for amalgam he avoided, as far as possible, leaving thin enamel edges, particularly on the grinding surface, as they had a tendency to break down and spoil the practical utility of the filling. He had never used the Bonwill method, because he had an idea that the less mercury in the amalgam the better. He used as much pressure in putting in an amalgam as a gold filling. He had often used gold with amalgam to prevent discolouration, in this way. Previous to introducing the amalgam he lined the cavity with gold foil, and then put the amalgam into the centre, firmly pressing it against the sides of the cavity.

Mr. Collett thought that, as a saver of teeth, nothing lasted so well as the copper amalgams.

Mr. Renshaw arose to give his testimony in favour of Flagg's amalgams, which he had found to be the best; and was of the opinion that if they were put in as carefully as gold fillings there was nothing equal to them.

Mr. Planck suggested, in regard to the merits of the various amalgam fillings, that what we wanted to have before us was accurate scientific experiments. Up to the present time, however, we have had no such results; but he predicted that we should, eventually, find out which was the best of these fillings.

Mr. Simms agreed with those speakers who favoured the copper amalgams; and where the colour was no objection he adopted it in his own practice with satisfactory results; and mentioned a case where he had seen such a filling that had lasted thirty years.

Mr. Skipp asked Mr. Campion what he understood by the *ordinary* method of packing amalgam? He carefully worked each piece of amalgam to the sides of the cavity, bringing the excess of the mercury to the centre, and when the top of the cavity was reached this excess was removed by applying dry amalgam.

Mr. Whittaker also agreed that copper amalgams, although they did turn black, seemed to last longer than the white preparations.

Mr. Houghton said that, although he had a favourite amalgam, what we wanted to arrive at was the best way of using these preparations; and also to get to know the reason why there were so many failures.

Dr. Shaw said that he was brought up in a school that abhorred all amalgams, but he eventually found them most useful. He suspected that onecause of their ailure was owing to the fact that all amalgams must, from the nature of the union of their component parts, more or less bulge in setting. He would like to see a copper amalgam that did not discolour.

Mr. Dougan had never seen a case of a copper filling lasting thirty years, and thought they usually washed out in six or seven years. With regard to palladium amalgam, of which Mr. Campion had made no mention, he had made sveral trials with it, and always with unfavourable results.

Mr. Campion, in replying, said that he had purposely avoided any remarks on the different alloys in the market, as he thought it would be unfair to publish comparisons between any of them, except after a long and elaborate series of experiments dealing with them all. With regard to the possibility of making a copper amalgam that would not discolour, he believed it was a fact that the saving property of amalgam was due simply and entirely to the very conditions which produced this discolouration. Certain salts of copper were formed, and these made their way into the dentine, producing a hardening of that structure which prevented further decay. By the *ordinary* method of filling with amalgam, he meant working the material while in a plastic state into the cavity and simply wiping away the excess of mercury which had been squeezed out. He too had had a great want of success with Palladium which he attributed to the metal not being pure.

The President said he had come to the conclusion, long since, that there was nothing better than gold and gutta-percha for fillings. If they took the advice of an old practitioner they would have as little to do with amalgams as they could. At the same time, Mr. Campion had treated the subject in a most scientific manner; and he had great pleasure in presenting to him the thanks of the Society for his paper.

STUDENTS' SOCIETY.
NATIONAL DENTAL HOSPITAL.

Ordinary Monthly Meeting, Held March 1st, 1889.
Sidney Spokes, Esq., President in the Chair.

The minutes of the preceding meeting were read and confirmed.

Mr. Shepperd having signed the Obligation Book, was welcomed by the President as a member of the Society.

Miss Marland was ballotted for, the result being unfavourable to her election as a member of the Society.

Casual Communications: Mr. Humby mentioned the dangers in using amalgam and gold fillings, when not properly plugged down to the cervical margin of the cavity. He brought forward two specimens of molars, one filled with an unknown amalgam, and one with cohesive gold, both fillings had failed through imperfect condensation down to the cervical margin.

Mr. Clark mentioned a case of hæmorhage from a mesial cavity in a second lower molar, in which the pulp was exposed, and which he destroyed. He drilled into the anterior root, upon which blood flowed profusely for about ten minutes. A styptic was applied which caused much pain, and the cavity was then filled with an oxy-chloride. About a fortnight after, the filling was removed, when the blood again spurted out. The cavity was then plugged up with cotton wool.

Also shewed model of a distal cavity in a lateral incisor tooth, which extended right under the gum, and did not allow of the rubber dam being properly applied. As the patient wished to have gold in the tooth, Mr. Clark had to hold up the rubber with an ordinary excavator in his left hand, whilst working with his right. He wished to know whether gold was justifiable in such a case.

A discussion on Mr. Clark's communications ensued in which Messrs Humby, T. G. Read, Rushton, Greetham and the President took part.

Mr. Haycroft presented a model of two molars shewing the free use of arsenious acid by a so-called dentist (?), which instead of being placed in the cavity, had been plugged up between the teeth, and caused extensive necrosis of the socket.

Also a very good specimen of polypus of the pulp.

The President called upon Mr. Haycroft for his paper on "Syphilis, and its relation to Dental Surgery," which proved to have been dealt with in a very thorough manner, especially as the subject gave so wide a range to the writer, and was much appreciated by the assembled members.

A discussion on the paper then ensued in which Messrs. Humby, Dr. Maughan, T. G. Read, Greetham, Field and Clark took part, after which Mr. Haycroft replied to the various gentlemen who had taken part in the discussion, and the President congratulated him upon the choice of his subject.

A hearty vote of thanks was accorded him, and the Meeting adjourned till Friday, April 5th, 1889, when a *Special Meeting* will be held, and Mr. R. Denison Pedley will read a paper.

Dental News.

THE DENTAL HOSPITAL OF LONDON.

The 31st Annual Meeting of this Institution was held at the Hospital, Leicester Square, recently, under the presidency of Sir Edwin Saunders, one of the Trnstees. In the report, which was unanimously adopted, the Managing Committee congratulated the Governors on the continued success and prosperity of the Institution ; also on the great benefits which the Hospital continues to afford to the suffering poor, 51,406 cases having been treated during the year 1888, a large number of them painlessly (under anæsthetics), being 3,965 in excess of those of the previous year, and 29,402 in excess of the number treated in 1874, when the Hospital was removed to its present site. That although, mainly owing to the legacies received during the year, the Committee had been able to reduce the mortgage debt on the Hospital there was still a deficit of £3,000 in this account, incurred through the indispensable enlargement of the Hospital ; and they felt compelled to make a further special appeal for funds to enable them to clear off this encumbrance, which presses so heavily upon the Institution, and greatly curtails the benefits which it would otherwise be enabled to confer upon the suffering poor. Help, by an increase in annual subscriptions, is earnestly solicited. The Charity is unendowed, and additional funds would enable it to greatly extend its usefulness.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

POPULAR LECTURES ON THE TEETH.

To the Editor of the "British Journal of Dental Science."

DEAR MR. EDITOR,—I willingly accede to your request to furnish you with a short account of my experiences in lecturing to popular audiences, on the teeth.

Thanks to Mr. Sedley Taylor of St. John's College, Cambridge. Mr. Williams, the Head Master of the Giffard Street Board School and Mr. Purdie, a medical student of our University who devotes a considerable amount of both his time and income to promoting the welfare of the poorer classes, an audience of about 600 consisting mostly of fathers and mothers together with about 150 of the school children and their teachers so filled the St. Andrews Mission Hall that a large number had to be turned away simply because the Hall would not hold any more. The interest was keen and well sustained throughout the whole lecture despite one or two mistakes on my part such as the occasional use of technical words and an unhappy quotation from Don Quixote as to the value of the teeth, for I soon learnt that the Knight of the sorrowful face and his amusing Squire were individuals beyond the ken of that audience. For me, however, it was a useful and instructive rehearsal for the more arduous task I had undertaken at the suggestion of Dr. Roberts, the Secretary of the University Extension movement in London, namely my haveing consented to give one of the course of Penny Science Lectures in connection with the Royal Victoria Hall and Coffee Tavern in the Waterloo Bridge Road.

This is the old "Vic," the former home of the transpontine drama and on the night of my lecture on "Our teeth, how they come and why they go" an audience of about a thousand attended, mainly in the gallery and pit for which the charges were 1d 2d & 3d. The presence of Sir Morell Mackenzie in the chair no doubt accounted in no small measure for the more than ordinary attendance.

In order to interest an audience of this kind, it is absolutely essential to make the lecture mainly pictorial, it was therefore profusely illustrated by a series of dissolving views. Thanks to the cordial assistance of Mr. Howard Mummery and Mr. Andrew Belfast, I was enabled to get up a tolerably complete series of transparencies. The proper manipulation of the slides takes a considerable time, and by the substitution of specially prepared diagrammatic slides, I hope to be able to reduce this lecture within more reasonable limits as to time.

As I think, the interest manifested by the audience is perhaps best evidenced by the fact that the applause was as enthusiastic toward the latter as in the earlier part of the lecture, although, on concluding, I found, somewhat to my dismay, that it had lasted an hour and three-quarters. Miss Alderman Cons, the acting manager, was delightfully surprised, for, as she said, "Our audience you see, is a good one, and they keep order for themselves, but they have an unmistakeable way of expressing their dissatisfaction if they are bored."

Miss Martineau, the Secretary of the Lecture Council, so expressed her opinion as to the suceess of the lecture, that I have already had several applications to repeat it to similar audiences.

After the lecture, thanks to the kindness of the Secretary of the National Dental about one hundred cards containing general instructions as to the care of the teeth were distributed. From the way in which they almost fought for the possession of these cards, it is evident that there does exist a considerable desire for instruction in dental hygiene amongst the poorer classes and therefore I trust the day is not far distant when it will be possible to supply a short and concise guide for the direction of the poorer classes in the care of their teeth.

The actual expense of lectures of this kind is considerable, as besides the hire of the Hall and other expenses, the hire of a good lantern and the services of a capable operator cost about £2 each night.

As the funds of the British Dental Association are almost inadequate for its own legitimate demands it is perhaps worth while discussing the question whether it would not be advisable for the Dental Profession to inaugurate and support some Association, or form some Fund for the promotion of the dental aspect of public health by means of lectures and cheap literature suited to the masses of the people. A well directed movement of this kind would do much to educate the public and to mitigate, if not annihilate, the pernicious effects of the dental quackery so prevalent in these times, and moreover be less expensive, than a few occasional prosecutions.

I am,

Very faithfully yours,

GEORGE CUNNINGHAM.

Cambridge, 9th March, 1889.

British Journal of Dental Science.

No. 510. LONDON, APRIL 15th, 1889. Vol. XXXII.

FOUR CASES OF FRACTURED INFERIOR MAXILLA : TREATMENT.

By F. Newland-Pedley, F.R.C.S., L.D.S.,
Dental Surgeon, Guy's Hospital.

A considerable number of patients suffering from this injury seek treatment annually at Guy's Hospital, and three of the cases I purpose recording were incomplete a month ago. Each of the four illustrates a whole class of fractures, and all of them required mechanical contrivances applied within the mouth.

Case I.—A middle-aged man received a kick from a horse and presented himself with a lower jaw that was literally collapsed by three fractures, one vertically on each side of the mouth in the region of the canine tooth ; and a third running transversely above the chin separating the lower front teeth with their sockets from the base of the bone. The sides of the jaw fell inwards, and it required moderate digital pressure

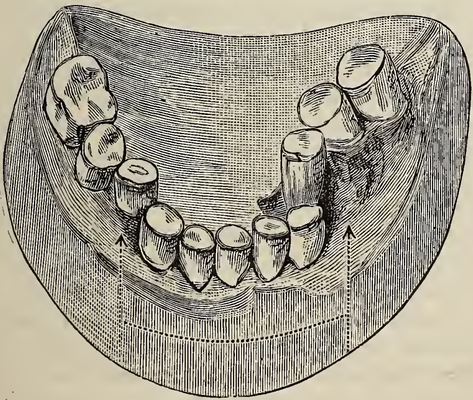

Fig. 1.—Model showing displacement of fragments before treatment.

to bring the lateral segments into position, though the central piece was quite loose. This was a typical case for the Hammond wire splint, for the parts could be brought into correct position by means of moderate pressure, and there were firmly

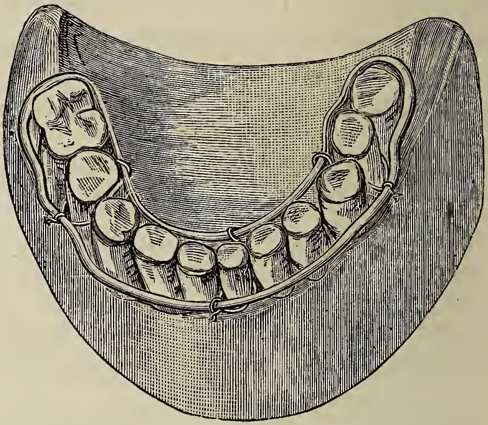

Fig. 2.—The same, with deformity corrected by sawing through the lines of fracture, and re-articulating, with model of upper jaw. Hammond wire splint applied.

implanted teeth in each fragment. Plaster-of-paris models were taken of both jaws, and a true model of the lower jaw with deformity corrected was obtained by sawing through the plaster along the lines of fracture, and rearticulating the fragments with the cast of the upper teeth (Figs. 1 and 2). A loop of steel wire was made to pass round all the teeth of the lower jaw along the gum margin, and was affixed to the fragments in corrected position by fine binding wires in the usual way. The splint was removed in seven weeks, the parts being restored to normal position. Lately I have used piano-wire and fine knitting needles for making the frame; the steel possesses greater strength, and diminished bulk as compared with iron. Gold solder should be used.

Case II. was a boy aged 8, with a fracture by the side of the canine tooth on the right side. He had been run over, and his face and head were very much swollen and injured. The posterior fragment was much raised, and required considerable pressure to reduce the displacement. The only teeth erupted were the first permanent molars and the central and lateral incisors, and these were very short. The temporary molars were carious and the condition of the mouth generally was not favourable to Hammond's splint. Models were taken, and the deformity was corrected on the plaster cast. A Gunning's splint (Fig. 3) was applied, consisting of a vulcanite plate covering the palate, teeth, and gums of the upper jaw and united by vulcanite pillars to a similar plate covering the teeth and gums of the lower jaw. The separation of the jaws allows spaces to be left between the columns of vulcanite for speech and the passage of food and saliva. For more than a week this splint did little good beyond limiting the movement of the fragments, for the displacement recurred as often as it was corrected, and the boy's face was so swathed in surgical dressings it was out of the question to apply pressure by a chin bandage. Gradually the fragments settled down into their position in the splint and, with the rapid union common in childhood, the case was complete in five weeks.

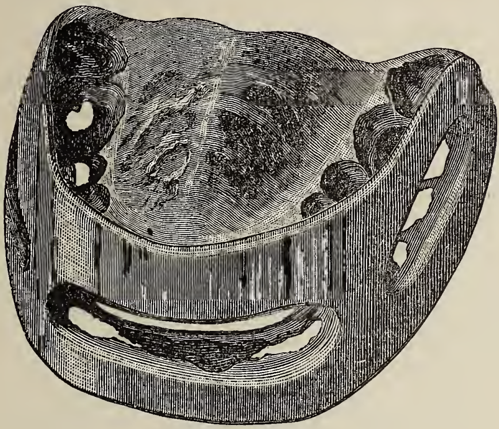

Fig. 3.—Gunning splint

Case III was a young married woman admitted into the wards of Guy's Hospital with necrosis of the lower jaw. Nearly the whole depth of the horizontal ramus from the median line to the angle was removed as a sequestrum. A few days afterwards the arch of the jaw yielded and collapsed, the sound side deviating towards the affected side and constituting a remarkable deformity due to "spontaneous" fracture. At the request of a surgical colleague, I constructed a form of Gunning's splint. A vulcanite appliance was made to cover the whole available surface of the upper jaw and gums, and to the lower surface of this there was attached a vulcanite cap that fitted over the teeth and gums of the lower jaw on the sound side only. The splint was inserted under chloroform, and the space left free on the affected side gave ample room for the introduction of food. This appliance was worn continuously for five months, at the end of which time the power to depress the lower jaw was obviously restored, with absence of pain. On the removal of the splint the teeth of the upper and lower jaw were in their correct relation to one another, and the maxillary arch was again firm.

Case IV was a patient in private practice. On her wedding trip to London she was knocked down and run over by a trap in which two men were seated. The wheel passed over her, and she was so injured it was thought she was dead. She consulted lady doctors especially about deformity of her face, but was assured there was no maxillary fracture. A fortnight elapsed and she returned home to the West of England, where she saw her family doctor, who advised her to consult a local dental surgeon. This she did, and at his instance she returned to London, three weeks after the accident, to be placed under my care. The face showed separation of the upper and lower front teeth to the extent of about three-fourths of an inch, and the lower jaw receded greatly. The mouth could be opened, and there was no deviation of the median line. Examination of the oral cavity revealed no fracture through the dental arches. Pressure over both condyles produced pain and some slight crepitus, more marked on the right side.

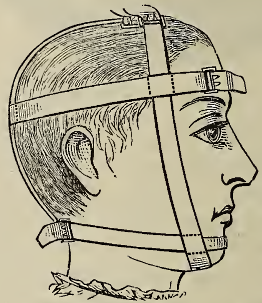

Fig. 4.—Special Bandage.

The appearances were in favour of dislocation, but there was no hollow behind the condyles. I obtained the aid of Mr. Davies Colley, and under chloroform a thorough examination was made, revealing fracture through the neck of both condyles. The deformity was reduced, and a chin bandage was applied in the hope of holding the jaw in place till a splint could be made ; but directly the patient began to come to the deformity began to recur, and very soon it was necessary to cut the bandage to relieve the pain. In consultation with Mr. Davies-Colley I made a full-size Gunning splint, with deep vulcanite rims, taking its fixed point from the upper jaw, and thus holding the inferior maxilla forward. The models were taken under chloroform, and the splint inserted under ether. A perfect position of the fragments could be obtained under the anæsthetic, but partial relapse took place when the patient came to, in spite of the deep rims of the splint and firm pressure applied by a special chin bandage. The latter was made of strips of webbing united by buckles (Fig. 4). The obliquity of fracture and the muscular action were such as to defy our efforts to bring the fragments of the jaw into their correct position in the splint by any pressure that the patient could readily bear. Increased pressure at once produced pain, swelling of the lower lip, and ulceration of the mucous membrane in contact with the splint. By degrees the lower jaw settled down into an improved position, and the patient was prepared for some slight separation of the front teeth at first. In five weeks the splint was removed under ether, and it was found that good union had taken place on both sides. The cusps of the molar teeth impinged on one another, and when these were smoothed off the separation of the upper and lower front teeth was an eighth of an inch, and this has gradually disappeared. The other injuries from which the patient was suffering were injury to ribs (fracture) and fracture of the neck of the scapula.

Dr. Harlan on Capping.—"I have little hope of the permanency of capping in adults where the pulp has been inflamed for any length of time, and where, when the pulp is probed, pus follows, though in vigorous patients the pulp may live."

FACIAL NEURALGIA.*

By Isaac Cohen.

Mr. President and Gentlemen,

Desirous of bringing before your notice this evening a number of causes and conditions of Neuralgia, chiefly those which come into our domain in practice, but as I cannot hope, however ambitious, to include all, in the space usually allotted to your essayists, and to achieve as much as possible, I must without any further preliminary remarks, commence my subject with a

Definition of Neuralgia. The meaning of the word is "nerve pain," and for the present let us accept this as our definition. The term has often been applied to any morbid exaltation of sensibility in parts not manifestly inflamed. I am also aware, that various authors have assigned to this disorder other names more or less synonymous with the above and which, as we get further into the subject, I may have occasion to refer to.

History. In a paper aspiring to practical value, I conceive that a resumé of the history of this disorder can have no legitimate place, since no useful purpose can be served by the same, and therefore, in speaking of the antiquity of Neuralgia I shall only briefly say, that from all that I could glean on the subject, it appears to have lost its origin in the obscurity of time and to have descended through generations of men, unaltered in its main features, though apparently increased in its severity.

Causes. These we may briefly class into two great divisions, viz., Predisposing and Exciting, and these include practically under their respective headings, all we shall refer to in treating this subject.

Under the headings Predisposing and Exciting causes, we group the following :—

Predisposing.	*Exciting.*
Neurotic Temperament.	Constitutional.
Period of Life.	Immediate.

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* A paper read before the Students' Society, London Dental Hospital.

Over-work. Fatigue.	Remote or Reflex.
Cold damp atmosphere.	
Chronic Alcoholism.	
Dyspepsia, &c., and in fact anything which tends to depress the vitality of the system.	

Neurotic or Nervous Vitality. We may, I think, assume that this is a condition mostly hereditary. And as a cause bringing such about, I have not seen any factor more conclusively proved by statistics concerning the family history of patients,than a violation of the laws of consanguinity by the inter-marriages of cousins; and which though recognised by the law, is to my mind a moot point whether we are not (from our knowledge of the subject, and our experience of the amount of harm done and the predisposition to neuroses transmitted from parent to child), the proper parties to point these things out and shew their evils, so that in time they may diminish. The begetting of offspring under unhealthy conditions of body and mind, must be mentioned, and in speaking of such, Kingsley says: " Fathers under a mental strain which drives them to the verge of insanity, transmit that exaltation to their offspring, and thus we see a generation of children inheriting a tendency to nervous exaltation, which makes them no longer children, except in their immature physical development."

The strain upon our life caused by the competitive age we live in, the over-pressure of children at school, and our manner of living are points which must tell against us in time, but to discuss which would take too much of our time at present.

Cold damp atmosphere. Is often a cause either locally or generally, and it may even excite a paroxysm when the neuralgia is due to a totally different cause. Cold, acts, I believe, by causing inflammation of the nerves.

Over-work and Fatigue, act as predisposing causes chiefly in those of a neuralgic diathesis, and we often find such patients complain of being attacked when they are tired or have fasted for a long time. I must bring to your notice that Anstie, Roose, and several other modern writers hold that Neuralgia is caused by exhaustion, or nerve prostration, or practically the cry of an impoverished nerve for better pabulum; this theory stands good in cases such as these; and personally I have seen a number of cases where no other cause could be diagnosed but simply, exhaustion or nerve prostration.

Chronic Alcoholism. Period of Life and Causes reducing vitality. I shall class these together, as, although starting from different points they yet meet on the same footing in their ultimate results. Chronic, or rather Excessive, Alcoholism, by reducing the system and causing other serious organic changes, make the unfortunate victims only too ready prey to this disease, and here, I would like to draw your attention to the fact, that though the children of habitual drunkards suffer various neuroses through hereditary transmission, yet such children appear to be deprived of the power of propagating their species, so that the drunkard's race soon becomes extinct; would that we could have such "consummation devoutly to be wished for" in many other disorders we have to deal with, notably Syphilis. With reference to the *Period of Life*, we, as Oral specialists may say that childhood is rarely affected, except when such may happen in early life through a carious tooth; Epilepsy, which by Trousseau has been compared in many ways with neuralgia, occurs in childhood, but how far we are justified in assuming an analogy between these two conditions is outside the scope of this paper.

By far the greater bulk of our patients that do and will present themselves for treatment, are between the age of 20 and 50, and we may rejoice that their sufferings come at a period in life when they are best able to be borne. Old age does not appear to be exempt, and in people advanced in years and with edentulous jaws, we sometimes find a most painful Neuralgia, probably induced by senile atrophy.

The period of puberty in both sexes, and the awakening of the sexual powers in the individual and their abuse, together with the great evolution of the whole organism which takes place at this period, are only too fruitful causes of those changes in the nutrition of the nervous system which occasion the neuropathic temperament.

Constitutional causes are familiar to all, and may be the poisons of Gout, Rheumatism, Syphilis, Malaria, or by Anæmia, Diabetes, and many other well-known disorders.

Immediate. Heat and cold caused severe facialNeuralgia for years in a patient subjected to extremes of the above, through his calling as a fireman. A case of this description was under treatment at this Hospital some twelve months ago; the patient was an engineer and in the habit of going long voyages to tropical climates, whilst going backwards and forwards he underwent great variations of temperature, and at such times suffered very much. Tonics were prescribed, but with what result I cannot say, as through absence from England, or freedom from pain, he has failed, like many other such grateful (?) patients to report himself for examination and thus allow me to complete my notes upon the case. As immediate causes, Trousseau points out that epilepsy and other coarse organic lesions of the brains are not unfrequently associated with Neuralgia. This association of Neuralgia with Epilepsy may occur at any age, but is more commonly met with in the middle period of life and in females at the climacteric period.

An aneurism of the basilar artery is recorded by Garretson, as another immediate cause, the aneurism was found to impinge upon, and to have caused much thickening and softening of the 5th nerve.

Necrosis of the Jaw, presence of foreign bodies or morbid growth in the neighbourhood of any nerve, and injuries of various kinds to nerves, must not be left out of account.

Periostitis of the lining membrane of the canals through which the nerves pass, by either causing adhesion of the nerves to the wall, or by thickening, by reducing their calibre, compressing the nerves, may be productive of much harm. Periostitis, we must not forget, may so act in situations, where the nerves are not inclosed in long canals and much in the same manner.

Exostosis. Pressure through the bulk of the fang of a tooth being increased, or by elongation, may cause the nerve to be compressed, or pushed out of its course, and may cause great sufferings, the 3rd division of the 5th nerve is the one most susceptible to this influence.

Tomes* mentions a patient, who suffered previously by consulting him with Tic-Douloureux for several years, and had derived no benefit from the usual remedies. After the removal of several teeth which were found to be exostosed, the pain abated, but returning it became necessary to remove all the remaining teeth from the upper jaw. This condition, exostosis, when found affecting one tooth appears to have a tendency, and frequently does affect the remaining teeth in the same jaw. So we should not forget this in a search for the cause of the patient's troubles.

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* Tomes Dental Surgery, p. 503.

Cases of Insanity from Neuralgia which was primarily caused by exostosed roots, are recorded, and one case is very interesting of a patient who was so afflicted in this manner. Through some necessity which arose when in this sad state, he was taken to have a tooth extracted (a lower molar), and with great difficulty and only after the application of great force was the tooth removed, and was found to be sound, but attached to it and growing from its roots a round smooth solid tumour (exostosise) about the size of a small filbert. The Neuralgia instantly ceased and the patient was restored to sanity.

The case of a lady who suffered excruciating pain from facial neuralgia is recorded by Prof. Abbott. Medical assistance did not relieve her and her surgeon then decided to sever her *facial nerve* on the affected side, and to any one with any pretensions to an anatomical and physiological knowledge of the nerves and their functions, it would be an insult to mention with what result. Migrating later on to another city, she again took advice and another surgeon decided to divide the other *facial nerve*, for what reason is beyond my ability to fathom ; need I say, he also achieved the only too expected and sure result—*nil*. After this, the lady decided to consult a dentist, to whom I think we shall all agree she ought to have gone in the first place ; and he after careful examination located her trouble to arise from one of her teeth, which was removed and found to be exostosed and with the result of a total cure from the neuralgia ; but how the patient fared with her two facial nerves cut, history does not tell us, but leaves it to our imagination. I have here for exhibition several specimens of exostosed teeth and several other specimens illustrative of cases I shall refer to later on, lent by the courtesy of the Curator, from the Students' Society's Museum.

Reflex or Remote Causes. Before proceeding to enumerate these causes which mostly owe their origin to the teeth I think we shall better understand our subject, if we commence this section by going over the anatomical relations of the 5th pair of nerves, which are the largest of the cranial nerves and those most susceptible to pain. Its distribution I have had drawn on this diagram and its remote connections upon this second diagram here, both ably executed for me by my friend Mr. Henry Darke. I have also this model here for your assistance; for the loan of which I am indebted to Messrs. Ash. I must ask your attention to these four chief ganglia (exclusive of the ganglion), viz: The otic, spheno-palatine, ciliary and submaxillary, which all serve to connect and place the 5th nerve in intimate relation with the sympathetic system: recognising this fact, we cannot be surprised at finding lesions dependent upon the teeth reflected to various and remote distances, and vice versa.

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*Dental Cosmos, vol. 18.

Let us consider for a moment the position of the maxillary bones, in which the teeth are implanted, with their rich supply of nerves, plexuses and ganglia, with their close proximity to the internal ear; and their great nearness to the eye and antrum, may afford us a clue to lesions existing in these regions. Nextly the oral cavity leads to the stomach where, if digestion be imperfect we get dyspepsia with its acid eructations, and these act detrimentally upon the oral organs and in addition through imperfect digestion of the food, we get the seeds of an organism, faulty in construction transmitted to a next generation, upon whom will surely devolve the duty of battling with life, seriously handicapped with a predisposition to various disorders. And the dyspepsia, may, remotely by causing debility produces neuralgia. No subject, in my opinion, can be of greater importance to us, than the disorders remotely set up by, or connected with the teeth. And really when we recollect the intimate connection of the trigeminus with the sympathetic system, it will not seem surprising that such reflex disorders should exist, indeed I should imagine one to be more surprised that so little irritation is set up, commensurately with the exciting cause which so often leads on to neuralgia, or even epilepsy (Cases of the latter condition will be found mentioned in Tomes' Dental Surgery, both from his own and others experiences, p. 567, *et seq.*)

In nearly every case, in fact in all cases, a cause exists, and we safely opine where Neuralgia attacks the upper region, the cause is of dental origin, in searching for the cause and failing to find such does by no means entitle us to say no cause exists, it is our inability to discover it, for the cause is there and stands to the Neuralgia as cause to effect; our failure may be through circumstances not being favourable to an efficient examination, and thus the cause may become concealed from us.

Some of the reflex causes of Neuralgia which obviously are concealed from our view, may be an uterine ulcer; hæmorrhoids; suppression of the menses; filaments of a nerve ensnared in a cicatrix; constipation; of all which I purpose laying before you some records of descriptive cases.

Although our knowledge is not yet perfect upon the subject; there seems a great sympathy in Neuralgic affections and such exists very patently between the epithelium and its products, thus in chronic cases of Neuralgia of the 5th nerve, nutrition is altered, the hair, skin, and mucous membrane being chiefly affected. We often see in these cases increased growth of epithelium of the mouth especially over the tongue on the affected side.

The hair over the eye-brow frequently changes colour during a paroxysm (as from black to white) but returns to its normal colour on the subsidence of the attack.

Pain in a tooth, causing Neuralgia, by no means indicates such to be the seat of disorder, it may be in remote or near tissues and dental disturbances may induce pathological changes in different parts of the body, or the nerve structures themselves may become the seat of the lesion, without any indication of pain in the dental organs. A wisdom pressing upon the molar anterior to it and so causing absorption, may expose the pulp and (through its deep seated position being very difficult of discovery) thus cause Neuralgia. An impacted wisdom, or indeed any impacted tooth; as I have explained with reference to exostosed teeth; may cause great pain by pressure upon nerve filaments.

Growths of nodular dentine in the pulp cavity, in the same way by pressure, frequently cause Neuralgia; and, here, gentlemen, I wish to say that there are several splendid specimens in the Odontological Society's Museum, and Mr. Bennett, with his usual courtesy, will be pleased, to escort any of you (who care to see these specimens) over the Museum and to point out their chief features. I am also indebted to him for the loan of these specimens this evening.

We come now to a consideration of those cases which result reflexly from pregnancy, and we commence on the presumptive evidence that oral disturbances during pregnancy indicate generally that the uterine functions are more or less disturbed. Pregnancy may induce pain by the contents of the uterus pressing upon some sensory nerve, which reflexly causes, it is felt in the 5th nerve and thus causes Neuralgia.

There are frequent complications coincident with the pregnant condition, which from their reflex actions oft-times cause valuable teeth to be sacrificed in the hopes of relief which is not then always a certain result. The consideration of all the facts connected with the same, must ever be of vital interest to us as oral specialists.

Amongst other complications of pregnancy, Playfair in his Midwifery says "Severe dental Neuralgia is also a frequent accompaniment of pregnancy, especially during the earlier months . . . . . . But not infrequently the Neuralgia depends upon actual caries of the teeth, and attention should always be paid to the condition of the teeth in facial neuralgia. There is no doubt pregnancy predisposes to caries, and the observation of this fact has led to the proverb "For every child a tooth."

The production of caries and exposure of the pulp, I need not remind you, may excite paroxysms of neuralgic pains. Again, women by requent child-bearing, without adequate intervals for recuperation, must of necessity become reduced in vital power, and this as I have in the earlier part of this paper pointed out, has much to do in making them subject to these attacks. It has been, and is still now, I believe, a debateable point how far and by what way, this connection between the uterus and oral cavity takes place, so as to make evident these reflex phenomena, and you will allow me to quote from a paper by Dr. Joseph Richardson,* to which I refer you for fuller information, who argues thus, upon this connection of the teeth and uterus.

"The blood supply of the teeth is derived from the External Carotid Artery through its branches the inferior dental and alveolar branch of the internal maxillary artery: and the vaso-motor nerves controlling the caliber of these vessels are derived from the External Carotid plexus of the sympathetic —a plexus derived immediately from the superior cervical ganglion. The uterine appendages and vaginal walls are supplied by nerves from the pelvic nerves of the sympathetic. Thus it will be seen that any impression having its origin in the uterus and its associated parts would be transmitted by way of the afferent vaso-motor fibres to the vaso-motor centre in the medulla and returning by the efferent vaso-motor fibres in reflex relationship with the former, would reach the carotid sympathetic plexus through the superior cervical ganglion. As the branches of the external carotid artery to which this plexus is distributed reach the teeth, it is not difficult I think to see how the teeth of the superior and inferior maxillæ become an area correlated to the uterus through the medium of the carotid plexus of the sympathetic system.

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* Dental Cosmos, 1882, p. 261.

If the disturbance in the pelvic region is such as only to cause slight irritation, the reflex lesion of the pulp would manifest itself as a so-called sympathetic neuralgia ; consequent on pressure of the nerve fibrils by engorgement and distension of the blood vessels. These sympathetic neuralgias of the teeth are commonly associated with pregnancy, and cannot be rationally accounted for, I apprehend, except in the manner here indicated. Ordinarily, the exciting cause would be insufficient to produce more than mere functional disturbance in the pulp ; but it is easy to see how reflex irritation of sufficient intensity and perseverance might induce blood stasis, inflammation, and disorganization or death of the pulp."

The following case was reported to the New York Odontological Society and is instructive, as the details will show. A patient, aged 56, with robust constitution previous to his troubles, suffered with neuralgia in the head, neck and arm of the affected side (left). Examination of his teeth disclosed nothing abnormal, permanent set were complete and no fillings were in the mouth, and the teeth were free from decay. Treatment by medicine was unsuccessful and the patient had through his sufferings to abandon his business and travel, but with no benefit whatever. Coming under the hands of another practitioner, he found the left tonsil swollen, red and sensitive evidently in the suppurative stage. History of the case, suggested more than mere tonsillitis, and caused him to search for the cause of the neuralgia, from which the patient had suffered previously. Patient was found slightly deaf on the left side. The enamel on some of the molars was found worn down, and upon applying different tests, it was decided

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* Dental Cosmos, Vol. 23 p. 365.

to drill into the pulp chamber of the 3rd left lower molar, on doing so the pulp was found dead, and on withdrawing the instrument pus escaped ; thus confirming a suspicion as to the teeth being the cause of all the trouble. The tooth was extracted, and at its root was found a pus sac larger than the whole tooth. The pathological story suggested by the above is this :—Firstly, attrition removed the enamel, then followed chronic pulpitis, death and decomposition of pulp setting up suppuration and the pus burrowed its way to the tonsil, producing suppurative inflammation. After a short time, the patient was completely cured. You will all be aware of and have seen cases where vision is interfered with through facial neuralgia, which is generally caused through some of the upper back teeth. I have a patient under treatment now, sent from the Moorfields Opthalmic Hospital, whose ticket is marked, "Neuralgia—Reflex from the Teeth." This condition caused her great pain in and about the eye-balls and also disturbed her power of vision. On examination, I found her mouth full of stumps, more or less decomposing. The patient herself was very anæmic. I advised all the stumps to be extracted, as they were beyond treatment, and also the first upper (left) bicuspid which had its pulp exposed and was crowding out the canine. Already a change greatly for the better has taken place, and I have no doubt whatever of a complete cure ; as this patient has only been under treatment a fortnight I cannot speak more definitely of the case.

Time forbids my entering into details about several other interesting conditions which cause reflex action of which there are a number of scattered records, which perforce I must leave to some future essayist to deal with and enlarge upon, and so shall content myself with naming a few that act reflexly and so make our diagnosis a matter of very great difficulty:—such are Irritation from fillings, Thermal changes in the fillings, Amaurosis, Glaucoma, Periosteal Cysts, Cervico-Brachial Neuralgia, &c.

In Amaurosis, a not uncommon reflex coincident of Neuralgia, we must, I suppose, take it for granted that the irritation of the branches of the 5th nerve, which supply the teeth, are through the ciliary system transmitted to the retina, producing hyperæmia and inflammation. A patient, age 30, is recorded to have been attacked with severe facial neuralgia, from which he had never before suffered. Nothing to account for the same could be found, but upon enquiry it was found the patient's bowels had not been opened for a week. Free purgation gave complete relief.

Ossification of the pulp was found by Mr. Hamilton Cartwright to be a cause, and he also mentions a patient of his who suffered from hæmorrhoids who always had severe facial neuralgia, and was only relieved when an attack of hæmorrhage relieved the engorged vessels.

Neuralgia appears to predominate in the female, and one cannot wonder at such; when we bear in mind, the more highly organised and sensitive nervous system as compared with man. The many sexual functions which, through causes however slight, become deranged, reducing health to a low standpoint, the chlorosis of the younger woman, pregnancy and its coincidents later on, and lastly at the period of the grand climacteric when the involution of the uterus is taking place, all combine to make women hyper-sensitive. In addition to constitutional, she is liable to hereditary causes, some of which may be in fulfilment of the Biblical prophesy that "The sins of the fathers shall descend unto the children of the third and fourth generation," and on this score we do not find mankind backwards in balancing accounts, but do so with interest by an indulgence in vices which only too surely are in their turn transmitted to their progeny.

Man, we find to be constitutionally quite differently equipped in view of the work of life, he has to do. He generally suffers from constitutional causes, or any of the disorders of health I have previously mentioned, hereditary and acquired, of which worry, over-work, chronic alcoholism and excessive venereal indulgences are no mean factors. Besides the neuralgia, which in old age affects those with edentulous jaws, there is another kind affecting both sexes, that is Tic Epileptiforme, as called by Trousseau.

It must be distinctly understood that a cause which affects one sex, may, except in various cases, affect the other.

Pathology. As our knowledge of this is very imperfect, through a difficulty of having a post mortem examination of any one who had died solely from neuralgia, I shall not detain you about any speculative matter, but proceed to discuss the *Diagnosis and Symptoms.* Like all other disorders coming under treatment, it is usual to obtain a full history both of the patients and their complaints, and to this rule Neuralgia offers no exception.

We must inquire the cause of the pain; whether it is unilateral, whether localized to one focus, whether it is confined to the trunk or branches of nerves, and in this a correct and thorough acquaintance with the anatomy of the 5th pair of nerves will greatly assist us, together with a knowledge of their relationship reflexly with other nerves. Note if the pain be remittent or intermittent. A common circumstance of Neuralgia is the formation of tender spots, where the nerves go from a deeper to a more superficial level or, where they emerge from bony canals.

Trousseau points out as assistance to diagnosis the appearance of tender spots over the cervical vertebrae, but this fact is disputed by Anstie, though I believe more recent writers agree partly with Trousseau, and allow of the existence of these tender places, but deny their being symptomatic of Neuralgia, arguing that they are produced sometimes by other causes.

In the acute stage, the attack comes on without any warning, and it is only when once the Neuralgia becomes chronic, that any premonitory symptoms are perceived, though such are scarcely visible beyond a little more watchfulness or fear exhibited by the patient. This feeling has been likened to that sensation experienced by women, just before the uterus renews its action in labour, as is well-known the patient can give warning of the same before any one else is aware of the fact. Shooting, electric darting pains along the course of a nerve, and its ramifications and the limitation to definite foci of the same.

A distinct intermisssion and remission follows the paroxysmal character of the attack. A recognition of these characteristics will assist us to diagnose between Neuralgia and other simulating conditions such as Migraine, Antral disease, &c. A knowledge of the various kinds of pain will also greatly assist us, indeed "pain" is our greatest help toward diagnosis. There are few of us, but what have at all times been greatly assisted in the diagnoses of our every-day work, by a correct knowledge of the pain and its description given us by the patients, and so it is here; the more so as in a number of cases ocular evidence confirms our suspicions and assists our diagnosis. The grades of pain are as various as they are varied, from the slightest sensation of uneasiness, onwards to a feeling of frenzy driving one well nigh to desperation.

We chiefly recognise "pain" as "stabbing" as in pleurisy; "racking" as in Rheumatism; "gnawing" in cancer, "tensive and throbbing" in inflammation, and as "darting," so characteristic of neuralgia and by "recurrence" in a disorder of the same description of pain, that we have cometo look upon it as symptomatic of that disorder, and therefore to us, as diagnosticians, it is of special importance as characteristic of any disorder we may have to treat.

By a careful examination of the teeth. searching for any of the disorders of dental origin which I have enumerated, by methods which you are practically conversant with, will assist in diagnosing various cases, and when in doubt follow Tomes's advice, apply the rubber dam to the suspected tooth and then test for lesions.

Neuralgia of whatever description, Trousseau says, is only symptomatic of a cause, whether of Rheumatism, Chlorosis, &c., and therefore to accept this theory, our diagnosis must be imperfect till a cause is found.

Should a local cause be absent, then a search the for cause should extend over the system at large, and should continue till a cause is found. Absence of febrile disturbances or rise of temperature is another distinction of Neuralgia. In cases of long standing and obstinate in yielding to remedies, inflammation may occur, together with, as I have before pointed out other complications, and this fact Anstie explains thus:—"Severe neuralgias are usually complicated with secondary affections of other nerves; which are intimately connected with those that are the original seat of pain, and in this way congestion of blood vessels, hypersecretion, or arrested secretion from glands, inflammation and ulceration of tissues are sometimes brought about. Another point which greatly helps us is the recognition of certain well defined spots or foci from which the pain usually seems to radiate. Tomes points out that the point or focus most usually affected is the spot where a number of nerves inosculate and is called the parietal focus from its nearness to the parietal eminence; and goes on to state "that where the cause is not apparent, the situation of the pain may give the diagnosis of the cause upon which the disorder depends. When the pain is in the parietal region or in the upper part of the temple the affected tooth is generally in the upper jaw and far back in the mouth. When it is referred to the eye, which is rather rare, the tooth may be found in any part of the upper jaw.

Pain in the ear or tempero-maxillary region is almost diagnostic of a lesion in the lower teeth, and generally towards the back of the mouth. Two facts more ere we leave this section of the subject, and facts which we should remember, as they give us hope in diagnosing obscure cases, they are (1) that no distinction can be found between neuralgia of dental origin and that of any other origin ; (2) Our difficulty is increased by the fact that pain is transmitted from a local to a distant part, as I hope to have shown under the heading of "Reflex Causes."

Prognosis. It is hardly surprising that under circumstances of great suffering, the self-asked query, Is life worth living? oft receives a negative answer. Yet Neuralgia, primarily is not fatal, although I can mention one fatal case ; which we must take as an exception, proving the rule. Neuralgia may prove fatal, in chronic cases, through secondary causes, by the severity of the attacks causing exhaustion and collapse. There is a fatal case reported in the Lancet of a lady who suffered from Neuralgia, so intense and without any appreciable intermission that medical and other measures were of no benefit to her. The pain depriving her of sleep for 40 days. A total loss of sleep for this period is, we know contrary to all physiological laws, but the sleep this poor lady got was quite inadequate and trifling, and it is probable death was due to the exhaustion caused thereby.

Youth offers us the best prognosis, and in the earlier stages of adult life the chances of recovery are favourable, but with each successive decade our chances of effecting much good diminish. In old age and in the edentulous neuralgia, if I may so put it, we must be guarded in our prognosis and when bodily degeneration has set in then our prognosis must be "bad." In the Epileptiform neuralgia and its frightful pains, we can give no hope whatever, and Trousseau says in speaking of the same, that in the course of 36 years' practice and experience, he has never known it to be radically cured ; this statement is still quoted by present writers, and has not been contradicted, so we must sorrowfully accept this as a fact.

In the majority of cases of Constitutional origin, I do not think we shall be asked to give any prognosis, as once we have diagnosed such to depend on constitutional lesions, then I conceive it to be our duty after remedying local causes, to remit the case to some brother practitioner of medicine upon whom will rest the responsibility of any prognosis. I may say that of all constitutional causes Malaria is the most susceptible to treatment and most favourable in its ultimate course and end.

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* Lancet, Jan. 7th. 1888 p. 47.

Where the irritation is of dental origin, then it is obvious that our prognosis may be of the most favourable kind. Again, we go to the darker side of the picture and have to give a most decided negative account in all cases of hereditary conditions causing neuralgia, as in patients of the neuralgic diathesis.

I think these will be the chief points upon which we may be required to prognose.

Treatment. I do not purpose to bring before your notice any specific because such I do not believe to exist, though various drugs under certain conditions are more or less useful. I do not lay claim to the discovery of a drug to cure all the neuroses that mankind suffers from such as is too often done in the pamphlets thrust into one's hands in the street, a practice I must most strongly protest against, not only as a violation of decency and public morals but also as frightening nervous people and raising before them such bugbears of symptoms, that finally their too easily duped mind is persuaded that they are suffering from the same. Their errand to these advertising quacks results only in their finding themselves poorer in pocket but richer in pain, and our complaint is, that we are consulted when the patient is very far gone and the disorder has got a firm hold, whereas had we been consulted in the earlier stages, the applications of appropriate measures, would have ensured to the afflicted patient, relief both in health and mind.

Gentlemen, the treatment is the simplest part of our work in connection with Neuralgia, and to be logical it is so for these reasons. You remember I told you, Trousseau proves that Neuralgia itself is only a symptom and therefore must depend upon a cause ; so it must strike one that we must find the *fons et origo* of the neuralgia, and so be enabled to direct our skill upon a known and appreciated cause, having settled this the treatment is philosophical, and its cure within the regions of responsibility.

I shall first speak of surgical remedies, because I do not intend to detain you very long upon these measures, and for this reason, that public opinion both in and out of the profession has not yet assigned us the duty of undertaking the graver operations, sometimes performed and rendered necessary in cases that will yield to no other treatment.

Extraction of teeth where they cure causes will offer no great obstacle, but all these cases should be done under the influence of an anæsthetic. We should also remember that in cases, difficult of diagnosis, we should always remove possible as well as probable causes, such as in a neuralgia of long standing, obstinate in yielding to remedies, where we find a lot of stumps in the mouth, it is the wiser policy to extract all, even though they may not clearly be the cause of pain, yet they are possible causes, and liable under varying conditions of health to become so, and we err if at all on the side of prevention in following this course.

You may often be asked by pregnant females, whether it is right when suffering from neuralgia caused by a carious tooth to have the same extracted in their then condition or to postpone the same till after confinement: We all know that at one time it was thought, and no doubt rightly so, that to have a tooth extracted was a good way to procure abortion, and this fact acts as a deterrent to many women, but the pain arising from such sources, by its reflex actions, would act far more prejudiciously than the slight momentary pain of extraction, and this is now minimised by the aid of anæsthetics; but we must remember Dr. Dudley Buxton* says in one of the latest published books upon this subject, "that at this time the nervous system is liable to receive strong impressions and is easily thrown off its balance"; and he goes on to say that unless imperatively necessary, operative measures had far better be postponed till after parturition. In an earlier part of this work he assures us that "pregnant women take all anæsthetics well, and are not liable to suffer any more after effects than at other times, and that we should not give more of the anæsthetic than is absolutely needed since it is manifestly important to avoid vomiting."

We must remember to advise our patients not to expect too great or immediate relief from extraction as we often see that a tooth that has ached for a long time has set up some sort of inflammation or condition of the surrounding tissue, which is not so easily cured, but the application of a little chloroform and laudanum (equal parts) on a pledget of lint, or even Phenol Sodique applied to the socket from which the tooth has been extracted, affords great relief.

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* Anæsthetics.

Nerve stretching has been performed countless times and with no real permanent benefit in the majority of cases, though there are a number of exceptions to this.

Division of the nerve or excising a portion have also been tried and with varying success, a simple way to divide the 3rd division of the the 5th is by means of a spear-shaped bur in the engine, passed through the socket of the 2nd molar of the lower jaw, until the bur touches the nerve, which may be known by its crushing through the cancellous tissue, and the momentary shock when the nerve is touched.

Another way to excise a portion of the nerve is by a small and trephining instrument in the engine, placed inside the cheek, in a position under the molars in the lower maxillary, about half way between the tip of the crowns and the lower border of the jaw, a piece of bone will be extracted and the nerve exposed to view.

Treatment by electricity has furnished its quota to our remedies and treatment, of late years it has in common with all other sciences received great advancement, and thus allows us a greater choice in its application. Cases are noted in the text-books where cured after electricity, when everything else had failed. The kinds whihc we shall find most useful are the Voltaic, Faradaic, and when these fail the Statical (of my own Wimshurst Machine for generating the latter kind, I have here this evening for your inspection). One word of caution is necessary, that is, when applying electricity to the head and face, we cannot be too careful to refer those requiring electrical treatment to the properly qualified medical electricians who make this a speciality, and who of course will act under the superintendence of some qualified practitioner. Surgical measures will be called for when the nerve becomes ensnared in a cicatrix, to reopen the wound and thus release it ; also in the neuralgia affecting edentulous jaws, this is done by drilling with a spear-shaped drill in the engine through the gums into the bone in several places round the focus of greatest pain ; with the object of relieving the pressure of the gum which through the absorption of the alveolus recede and press against the bone some filaments of the nerve and so cause the pain. A case was by this method successfully treated at this Hospital some time since by Mr. Canton.

I shall try and condense an account of drugs and their suitability for our purpose, and though our choice of really efficacious ones is not too large, yet we find one which acts with very great success ; namely, Quinine. This drug has been found to be specific in malaria in Neuralgia of malarious origin where we have doubts in our diagnosis, full doses 15-20 grs. will generally give immediate relief and when given before an attack, frequently ward it off or greatly minimise it, but after the exhibition of 3 or 4 such full doses with no relief whatever, then the supposition is against a malarial origin. With reference to the use of Quinine, Anstie says : "I know of no circumstances which indicate beforehand that Quinine will be useful in the non-malarial cases, except it seems much more effective in neuralgia of the opthalmic branches of the 5th than in other non-malarial neuralgiæ.

When the cause depends upon constitutional irritation whether by rheumatism, syphilis, &c., in addition to ordering narcotics to relieve the acute symptoms, we must also give the drug indicated by the diseases."

Chloral and Camphor $(\overline{aa})$ when rubbed together form a syrupy fluid and when gently painted over the nerve sometimes gives great relief though at other times it does not. It acts best upon the 3rd division of the 5th.

The external application of Aconite and Chloroform Liniment has been found useful, if it acts at all it does so at once. Internally Aconite in $\frac{1}{100}$ gr. doses 3 times daily gradually increased till $\frac{1}{20}$ gr. dose is reached has been successfully used in Trifacial Neuralgia.

Counter-irritants, of which we possess Cantharides, Mustard, Capsicum and the various compound blistering plaisters, we can only expect to generally affect the acute symptoms and give momentary relief, whilst other means are taken to act upon the cause. Anstie advises the application of blisters to the posterior branch of a spinal nerve. Chloride of Ammonium 30 gr. doses several times daily acts both upon the cause and other conditions.

Chloroform and Ether, often relieve, but seldom permanently; the way to apply the former, externally, is, to pour some on cotton wool, previously placed in a wine glass and then invert this over the painful spot. Ether by means of the spray, by its freezing action, produces local anæsthesia ; but the after suffering is sometimes far greater than that it was intended to relieve. In conjunction with other drugs, placed on a pledget of wool in a carious tooth, it often gives temporary relief.

Our Pharmacopœia contains one drug which seems to act upon all neuralgias, that is the Hydrate of Croton Chloral, it even acts upon the fearful pains of Tic Epileptiforme. In facial neuralgia I think it will be best prescribed as follows :—3 grs. of the drug $\frac{1}{200}$ gr. of Gelsemia, which, administered every $\frac{1}{4}$ of an hour for the first 6 or 8 doses and then hourly afterwards, till the attack is under control.

In cases where Iron is called for, we have to judge, in ordering the same, the idiosyncrasy of the patient. Some taking the blander non-astringent forms, others the astringent but some cannot tolerate any preparation whatever. The Carbonate and Sulphate will generally be found most useful.

Nitrite of Amyl will by inhalation, often ease an attack, the remedy is so simple and its access in the form of the capsules within the reach of all, that it is worth a trial, but I suppose the patient would be liable to headache if administered in excess. Alcohol is recommended, but when it becomes necessary to prescribe it let us do so cautiously, as the relief sometimes afforded, lulls the patient into a false security, and thus they argue "what eased me now will do so again," forgetful that it takes increased quantities to do so, and undoubtedly many patients have thus contracted the tippling habit ; instead of in the first place taking proper advice and having the cause, not symptoms treated. Alcohol, it is taken with food, a convenient form to give it in will be some good Stout.

Port Wine and Quinine is a familiar remedy in this disorder, albeit there is often a tendency to imbibe the former more frequently than the latter drug and more often than our usual direction "*ter in dies sumendum*," warrants patients doing.

I need say no more about Alcohol, I have simply mentioned, without prejudice, my own views on the matter ; as you must all be aware of the danger of its use and its harmful qualities when taken excessively. Belladonna as the Ointment or Liniment, locally applied, in a number of cases gives relief. Trousseau has recommended its use as follows :—One-fifth part of a grain to be administered every hour till giddiness appears, and then to lessen the dose, but to continue the medicine for several days.

Phosphorus, Arsenic and Cocaine (Injection $\frac{1}{4}$—$\frac{3}{4}$ grains) have all been used with varying success.

We have two new drugs which have come into use during the last 3 or 4 years, *i.e.*, Antifebrin and Antipyrine, which both according to all accounts seem very promising; the former I can speak of from experience, and find that given in from 5-10 grains, with 30 minutes interval, 3 doses of it is very efficacious. These drugs I believe are destined to play an important part in the treatment of this disorder, and to those of you who care to go deeper into the action of these drugs, I shall be pleased to assist by reference to the notes I have collected. Prophylactic measures should be taken by all who suffer from Neuralgia, and amongst dietary measures, fatty food should largely predominate, as such act most beneficially on the patient, although, as a rule they have repugnance to fatty articles of food, by tact this can be overcome, or it may be ordered as cream, or as the Malt and Oil Extracts and many other ways, only limited by the ingenuity of the practitioner. Growing a beard has been advocated by Dr. Mercer Adams,* who gave statistics to prove the utility of his idea.

In the treatment of patients of this class, nervous and most impressionable, it behoves us to do all we can to reassure them, and to drive away their fear, everything that tact, kindness and sympathy can devise should be done. No needless exhibition of instruments should be allowed, or anything tending to frighten. We should achieve nothing by deception, win first the confidence of the patient and the rest is easy. To accomplish our ends by misrepresentation savours too much of quackery. But above all be firm, and once having made up your mind as to the course you intend to pursue, do not allow yourself, by persuasive powers, to be swayed from your judgment, rather sacrifice your patient, than your principles, because to do so will be regretted once only and that—always. In short our maxim should be "*Suaviter in modo, fortiter in re*" with an augmentation of the former quality and no diminution of the latter.

Gentlemen, I must now conclude, and whilst acknowledging that there are a number of cases, conditions and drugs, men-

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* Edinburgh Medical Journal, 1861.

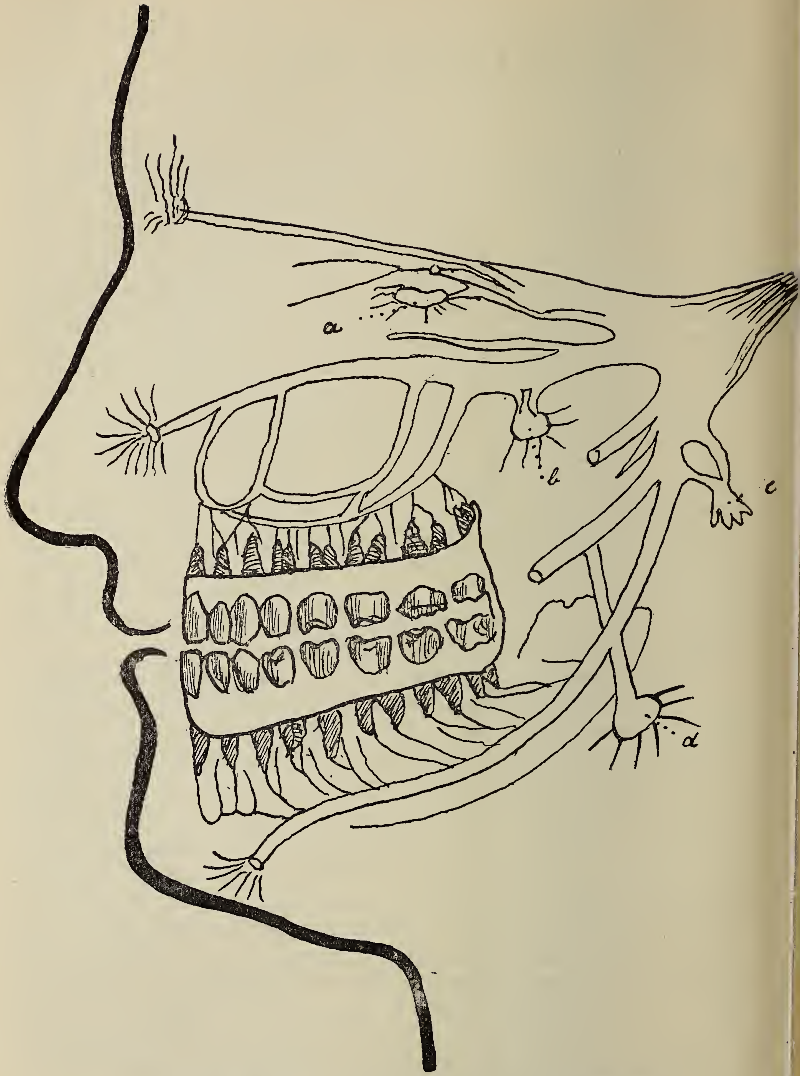


DIAGRAM OF THE FIFTH NERVE.

Showing its ganglia through which it is intimately connected with the Sympathetic.

A. Ciliary. B. Meckels. C. Otic. D. Submaxillary.

tion of which, through space I have had to curtail, and some, leave out altogether, yet I have tried to place only those I considered of value in this paper.

If aught I may have said this evening increases your interest in this most absorbing subject and thus stimulates you to further exertions and by that, indirectly assists you to diagnose, alleviate and cure this, which has been termed the most painful of all the neurotic disorders, I shall not consider my work in vain. However much you may criticise any of my statements I think we shall all agree that every dentist should be conversant with all that is known upon the subject, and I cannot help, but think that even in the most obstinate cases the resources of science are not yet exhausted, a fact we must be thankful for. I have now only to thank you for your kind and patient attention.

MALAISE AFTER DENTAL OPERATIONS.—Antipyrin may be used with happy results in headache after prolonged filling. It leaves no bad after-effect. Patients will often get out of the operating-chair with severe headache, which is relieved quickly by a 4 or 6 grain dose.

DENTAL ODDITIES.—Upon an old sign-board in Devonshire, was inscribed :

Thos Smith Glazier
Let Blood and Draw
Teeth Tea Kittles & Potts
To be Handled Heare

This board is now in the Odontological Society's collection.

Another sign of an " advertising dentist " reads :—

Ye worthies of the British Nation
Attend to my new Operation
Let colts'-teeth or decayed ones come
My pinchers quick shall ease your gum."

British Journal of Dental Science.

LONDON, APRIL 15th, 1889.

FRAUDULENT REGISTRATION.

UNDER Clause 37 of the Dentists' Act, 1878, [41 & 42 Vict. Cap. XXXIII.] provision is made for the Registration of certain persons who have not obtained a registrable diploma, and moreover have not been in the practice of their profession prior to the passing of the Act. The clause runs: "Any person who has been articled as a pupil and has paid a premium to a dental practitioner entitled to be registered under this Act in consideration of receiving from such practitioner a complete dental education, shall, if his articles expire before the first day of January, one thousand eight hundred and eighty, be entitled to be registered under this Act as though he had been in bona-fide practice before the passing of this Act: Moreover it shall be lawful for the General Council by special order to dispense with such of the certificates, examinations, or other conditions for registration in the dentists register required under the provisions of this Act, or under byelaws, orders, or regulations made by its authority, as to them may seem fit, in favour of any dental students or apprentices who have commenced their professional education or apprenticeship before the passing of this Act." Although, doubtless, the enactment therein made was intended to help *bona-fide* students whose career might otherwise have been materially injured, it has led to a good deal of shady procedure Black-sheep, such as exist in every profession, have been found among dentists, and these have been astute enough to see that Clause 37 of the Dentists' Act offers an opening whereby the spirit, if not the letter, of the Act can be contravened with apparent impunity. We have good authority for stating that many persons have obtained admission to the Register by virtue of sham certificates, that is by certificates, obtained from actual practising dentists but really sham, inasmuch as the "complete dental education," which the pupil is supposed to have enjoyed has no existence save in the imagination of the certifying and possibly the "certified surgeon dentist." Fortunately this form of fraud is not difficult to detect when attention is once drawn to it and is punishable by expulsion from the Register of the offenders as well as by other pains and penalties incurred by those who make false documentary attestation. It has, we are informed, been decided to attack this particular species of fraudulent registration with every rigour the law permits, and to this end it is most desirable that all persons who are in a position to give information about such cases should come forward. When it is remembered that the Dentists' Act was passed to assist, protect, and establish dentists, it is little short of folly that the general run of dentists should ignore its provisions, and instead of assisting by every means in their power the efforts of the Registrar and district Registrars, should by their carelessness and heedlessness throw every obstacle in their way and so hinder that to dentists most important consummation,—an exhaustive and accurate Dentists' Register. Again and again do we receive complaints from the Registrar, that the circulars sent out by them enquiring whether a dentist has removed or not, are unheeded. All are asked to return the circular whether its contents are accurate or inaccurate, and if the latter, full corrections are to be made. If registered men will do this, and will furthermore send information about those who practise without registration and about those who, they believe, have obtained registration by fraud they will assist the profession at large as well as themselves. Apathy even when accompanied by a power of trenchant fault-finding and grumbling at the "powers which be" cannot achieve any beneficial result, and bring us a single step nearer an expurgated Register. We have fought a good fight up to the present and gained a great deal, but there remains much yet to be done, and in this the rank and file of the profession must bestir themselves and learn that those who are best helped are those who help themselves. The new Register has recently been published; and its accuracy depends largely upon the returns made by those who have been circularised, and the fresh circulars which have now been issued will afford all dentists an opportunity to correct any inaccuracies which they detect in the present issue. We cannot impress too stronglythe obligation the whole profession is under to do all in their power to correct, expunge, or add to the Register as it now stands. Not only fill in your own circular with care but jog the memories of your friends and neighbours—it is the only way. Those who do not return the circular are *liable to have their names erased.*

More Cases of Cocaine Poisoning.—In the case of Mr. Reedy, the Clinic of the Northern Illinois Dental Society, about four minutes after the injection of nine minims of the four per cent. solution of hydrochlorate of cocaine the patient suddenly became pallid, and in his own words "he felt a dizziness and became sick at his stomach and wanted to sleep, but by a powerful effort he aroused himself." The muscles of his legs began to twitch involuntary, which continued for about one hour. A profuse perspiration broke out on his face and forehead. Brandy was taken to the amount of three or four ounces. There was no mental disturbance, but the patient felt a numbness on the right ride of the face. His pulse was lowered slightly, but soon became normal. The patient looked as though he were in great distress, and frequently shivered, like one being suddenly exposed to cold draughts. He did not feel the effects of the brandy and was not in the habit of taking stimulants. He had not tasted liquor for nine years. The solution was freshly prepared the day before using it.

Treatment of Inflamed Pulp.—"It always seemed to me," says Dr. Noyes, of Illinois, "difficult to understand why an inflamed or exposed pulp should be treated differently from any other wound. The essentials of success in the treatment of exposed pulps are: First, cure the disease; second, render the cavity and contents aseptic; third, protect the pulp perfectly without irritation, and shield it from heat or cold. If we want success in these cases, we must recognize the fact that septic poisoning is always possible in the mouth. These essentials can be secured by a variety of methods, where the operator is skillful and the opportunity favourable. The treatment may be thus summed up: Removal of irritants, protection of the pulp from further irritation, and counter-irritation."

A Death not due to Nitrous Oxide Gas.—Mrs. Elizabeth Cusick, aged sixty years, of No. 193, Third avenue, died in the dental rooms of Dr. Theodore Albright, in New York, about thirty minutes after having had some teeth extracted. Mrs. Cusick, with her daughter Mary, visited Dr. Albright for the purpose of having four teeth removed, and insisted upon taking gas, notwithstanding the dentist's advice to the contrary. She was a portly woman, and he feared she might be suffering from some form of heart trouble. He finally administered the gas, after giving her a small dose of brandy. The operation of extracting the teeth was successfully performed. Soon afterwards Mrs. Cusick complained of a feeling of oppressiveness. Medical aid was summoned and hypodermic injections were administered, Mrs. Cusick became unconscious and died soon after. Deputy Coroner Conway investigated the case and found that the woman died of fatty degeneration of the heart. The *American Journal* of Dental Science from which we take the above, seems to be inclined to believe that this was a case of death from Nitrous Oxide. As far as the record of the case goes, we submit that it simply pointed to a failure of the heart after undue excitement and probably some shock.

THE FORMATION OF ALLOYS.—Alloys may according to *Science* be formed by submitting fillings of the constituent metals to high pressure without an appreciable rise in temperature. Ward's alloy of cadmium, tin, lead, and bismuth he produced by mixing proper weights of the metals and subjecting them to a pressure of 7,000 atmospheres. The block thus produced was filed up and again pressed, and the result was the exact counterpart of the alloy as produced by fusion. From this and Spring's experiment, the experiments concluded that contact at the fusing point of the alloy—70° C.—was sufficient to cause the particles to fraternize without pressure. He placed the filed metals in a glass tube, slightly packing them down, closed it, and kept the tube at 98° C. over night. In the morning the filings had settled down considerably, and by jarring the tube a globule of the alloy appeared. The experiment was repeated with larger quantities with the same result, and other alloys behaved in the same manner; so he proposed the law that an alloy can be formed out of its constituent metals at a temperature above the melting point of the alloy, although far below that of any constituent, without pressure.

SOLDERING.—Dr. Patrick writes in the *Western Dental Journal:* "1. Two surfaces of gold are caused to unite with solder, partly by cohesive force and partly by chemical attraction, and it follows that the solder used should not only be more fusible, but should have a strong affinity for the gold without impairing its natural qualities. For this reason, *all gold solder should be made from the gold that it is to be used with.*

"2. When gold solder is used to unite two surfaces of gold that are expected to stand much strain, it is a matter of first importance that the solder should be as near the quality of the gold as possible. No baser metal than copper should enter into its composition.

"3. The solder should be as malleable and as ductile as the gold that is soldered, and, when polished, should be the same colour as the gold."

The following are recommended :

FOR CROWN GOLD.

Pure gold	15 parts
Platinum	1 part
Cyanide potassium, fused in a coke fire for 30 minutes at least,	5 parts

FOR BAND GOLD.

Pure gold	1 part
Gold coin, fused	1 part

NUMBER ONE SOLDER.

Band gold	89 parts
Pure silver	7 parts
Pure copper	4 parts
Borax, fused	10 parts

NUMBER TWO SOLDER.

Solder No. 1	89 parts
Pure silver	7 parts
Pure copper	4 parts
Borax, fused	10 parts

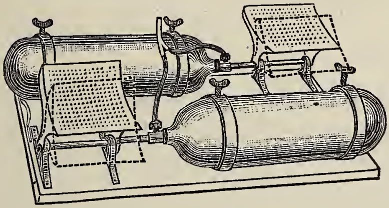
“Awaiting Teeth from Heaven.”—Under this heading the *New York Herald* writes :—The following remarkable case of insanity is telegraphed from Sharon, Pennsylvania :—Christian Scirner, the religious fanatic, has wrecked one mind in Sharon. Mrs. Mary Hawk, one of the band who believe in his doctrines, is mentally unbalanced, and has thrown away her false teeth in anticipation of a new set from God. She has been so violent for the past few days that physicians have only succeeded in quieting her by administering powerful drugs. The sedatives had to be given in some form in which she could not recognise them, as she claimed to be under the direct influence of the Lord, and refused medicine.

The Dental Troubles of Russian Soldiers.—Javorsky (of St. Petersburg) discovered that out of 1,725 Russian soldiers, as many as 709, or between 40 or 50 per cent., suffered from dental affections. He afterwards classified the patients according to their nationality and anthropological characters, and the following results were obtained :—The largest proportion of patients was met with among the Jews, then came the Poles, the Lithuanians, and lastly, those who hailed from Greater Russia.

Happy Glasgow.—Glasgow is blessed if the following from one of her papers is to be taken without a grain of salt. " But what of the budding druggist who practices in a back parlour ? He is worse—much worse. He charges a shilling a tooth ; if it were a shilling a wrench he would get rich much quicker. As a rule, one half of the shilling goes to the operator, half to the owner of the shop. A friend of mine came to Glasgow as a druggist's assistant, but he had no practice in jaw-smashing, so he had to forego the pleasure and the profit of that department. But one day a burly sailor came in agonised by toothache, and my friend benevolently resolved to attempt relieving him. He did, and managed to draw the molar, and fix up the sailor's lacerated gums. The patient laid down his shilling, and outspoke :—" I was in Greenock, and they advised me to get my tooth drawn there, but I said 'No ! I'll go to Glasgow where they know how to pull a tooth." ' He looked quite calm and bland, but he was a heavy man, and my friend thought it would be better not to ask whether the remark was meant sarcastic."—*A Local Paper.*

Manipulative Miscellany.

All new instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being, to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.



A NEW GAS APPARATUS.

For practitioners or anæsthetists who use gas from the bottle without a reservoir, it is necessary to have some arrangement whereby a second bottle may be brought into use at any moment, when the first shall be exhausted. For this purpose, some use a union connecting the two bottles with the bag and face-piece with a round roughened foot-piece to be moved in horizontal direction with the foot when releasing the gas. In this arrangement and any modification of it, it is necessary to open the first bottle with a key, and then, if necessary, at a later stage the reserve bottle. This latter proceeding, especially if the bottle be a "tight" one, may result in much waste of time and inconvenience at a critical moment during the anæsthetisation (or production of anæsthesia). The illustration shows an arrangement of bottles, invented by Mr. Vincent, of Great Portland St., London, upon a stand in which the pedal piece is moved in a vertical or "to and fro" direction, and being in connection with a spindle directly applied to the nipple of the bottle, not only "turns on" the supply of gas, but controls its escape. It is claimed that if the bottle is properly placed in relation with the spindle in the first place, the "to and fro" movement of the pedal piece will suffice to empty it without further adjustment, and in the case of the first bottle being exhausted, the pedal piece is easily adjusted to a similar spindle on the second bottle, and is at once in working order. It may be seen at the Depôt of the Dental Manufacturing Company, Lexington Street, Golden Square, W.

SHOULDER-BUR FOR SHAPING ROOTS.

F. H. Hallam & Son.

This is a small fissure bur to which is added a shoulder which will serve as a guard and a guide in reducing and shaping a root preparatory to receiving a gold crown. The bur itself is a little shorter than Hallam's ordinary fissure burs. We do not understand that they are made in different sizes at present. The instrument was made at Mr. F. G. Reed's suggestion.

Abstracts of British & Foreign Journals.

OHIO STATE JOURNAL OF DENTAL SCIENCE.

CONTINUOUS GUM DENTURES.

Dr. W. H. Miller, Canton, O.

Continuous gum dentures have at all times been regarded as the ideal style for the making of artificial teeth, as the only method which would at once fill the requirements of strength, adaptability, and capacity for producing artistic results. The only, or rather the great hindrance to the general use of continuous gum has been that it was impossible to make it so that it could be offered to our patients at a price competing with other methods. The fact that little or nothing in the way of artistic taste could be displayed by the use of sectional block teeth, has not been denied, but has been asserted over and over again, and text books, with one accord place continuous gum work at the top of the list, all others being regarded as they compare favourably with this style of work. Yet in spite of this fact, sectional block teeth and rubber plates, *because of their low price,* have practically pushed this *ideal* work from the field, have tended to drag mechanical dentistry to the low plane where it now is, and where little but of the "mechanical" is called for, or if called for, could be exercised. The operative department has been advancing. A method which Dr. Miller has found useful is as follows: Make a die and counter die of the gum portion of the model as far round the arch as may be necessary to include bicuspids. Strike up a plate of platina wide enough to cover the gum and alveolar ridge, on this set up continuous gum, teeth, back, solder, put on body and enamel in the usual way and fuse. You now have a block of the eight anterior teeth that are strong, just suited to the case, the contour and thickness of the gum is just right, and your teeth have just the arrangement that you chose to have, they are all that you as an artist have seen fit, or shown the ability to display. You have had no joints to grind, no "dark joints" to worry you. This block is now set on the model in the articulator, the remaining teeth set up, the plate waxed up, invested, packed with rubber vulcanized and finished in the usual way. You now have an artificial denture that combines the *highest possible style of art at the lowest possible price.* You have something that will satisfy your patients and be a credit to yourself, and that you can offer to your patients at a price that will compare with the ordinary teeth made. The cost for the material entering into a plate made in this way is not materially greater than the expense of the material entering into the construction of a set of sectional block teeth on a rubber plate, while but little more labour is necessary. When we see the result of this work and know when we take a case that its final result will be what we desire it shall be, and that it will not depend on the selection of something "that's good enough," it will stand criticism, and meet the requirements. Our own gratification in being able to meet the wants of our patient, and the knowledge that we are able to produce good results uniformly and at a low cost, will be so great, that having once adopted this plan we will not abandon it.

THE DENTAL REVIEW.

AMALGAM FILLINGS.

By Dr. Lewis Ottofy.

Amalgam fillings should, as a general rule, be finished at a second sitting. There is no doubt that physical changes occur during the setting of an amalgam filling, which may alter its form or even position to some extent, and this alteration is in progress for many more hours after the introduction of the filling than would permit of its being finished on the same day. An exception to the rule might be made in the exceedingly small fissure cavities in the molars and bicuspids. The approximal surfaces should be contoured whenever possible. The cervical margin and the filling at that point ought to be polished with the sand paper discs and polishing powders as carefully as gold. At the time of the introduction of the filling, all loose fragments should be removed from about the mouth by the operator; these particles of amalgam, if allowed to remain, often float back, become attached to the filling or the approximal surface, and the finish of the filling is made difficult.

WESTERN DENTAL JOURNAL.

WHAT IS THE BEST METHOD OF PERMANENTLY FILLING PULP CANALS?

The importance of this question is admitted on all hands, and it must appear to any one who follows closely the records of the method adapted by different dentists that there is a great variation in the manner of filling root-canals. If root-canals are thoroughly prepared and perfectly filled there will be no future disease, but how can it be perfectly done? At a recent meeting of the Odontological Society of Philadelphia a paper was read advocating permanent fillings of carbolised cotton. The practice was strongly condemned by a large section of the Society. Efficient Root fillings of gold foil, tin foil and amalgams can be and are often made, but these materials are inferior to oxychloride of zinc and gutta-percha. Preference is give to oxychloride of zinc, because union between it and the dentine is perfect, and "because it cauterizes and makes fixed material of the organic matter which may remain in the canal and dentinal tubules. It makes a more solid foundation for gold than gutta-percha. The objection to it is that it may be forced through the apical foramen, to avoid this the foramen should be securely closed with a small point of gutta-percha. If gutta-percha is used for the root-filling and the operation is commenced with chloro-percha, care must be taken that the solution be not too thin. To ensure the introduction of the material to the apex first introduce a shred of cotton moistened in chloroform, and the gutta-percha rapidly introduced will be conducted to the moistened parts. Chloro-percha should only be used as a starting procedure, solid points being added and firmly pressed. After evaporation press again to insure solidity. As an objection to entire gutta-percha fillings it is often stated that they leak, to meet this objection and also the objection advanced against entire oxychloride fillings, gutta percha should be used as the filling for the apex and its immediate vicinity, the oxychloride being then added to fill the canal. By this method the canal is perfectly closed with an imperishable compatible material, and will produce more satisfactory results than any other method known.

Review.

A Test-Book of Operative Dentistry, by Thomas Fillebrown, M.D., D.M.D. Philadelphia: J. Blakiston, Son & Co., 10 & 12, Walnut Street, 1889.

The aim of this book is to describe the manual operations required for the preservation of the natural teeth. That there is a decided call for such a work is beyond question, and the fact that this book was written at the invitation of the National Association of Dental Faculties, proves that the profession in America recognised the need.

Keeping in mind the object of the book—its very '*raison d'être*'—the impression which a careful perusal has left on us is that, though it contains valuable information, which is on the whole clearly enunciated, it is capable of some improvement.

It is recognised in the preface that the book has been pushed forward vigorously, and it bears the marks of some violence of treatment throughout. Much difficulty must always be experienced as to how much anatomy, physiology or surgery, a book of this nature should contain. Few would say that no reference is necessary, on the other hand, few will agree that so much space should be devoted to these subjects, as the author has deemed wise in this book. If a wide range of subjects is introduced into a small book, compression becomes necessary, and in consequence, the subjects are inadequately treated. The inclusion of such subjects, as "The Dental Tissues," "Temporary and Permanent Dentitions," and "Anæsthesia," in our opinion justify the foregoing remarks concerning the book under review. Nor should we think the section about Anæsthesia appears at all in such a work. This is a large subject, which demands very careful and detailed instruction to be of real value. What has been written in this book is so far as it goes good, but the subject cannot be adequately discussed in six pages, —again, this is a branch of knowledge which emphatically is not included under Operative Dentistry.

The extracting implements, of which there are numerous full-page illustrations, are sharply divided into American and English. The former, which include the key, we only mention to emphatically condemn—it does not speak highly of the advancement of this science amongst our brethren, that that horrible instrument, the key, which we fondly imagined had long become relegated to museums of ancient instruments, is figured as an extracting instrument in a book on high class Operative Dentistry, published in 1889.

The sections on instruments and filling materials, especially gold, are excellent. This part of the work is without doubt, highly instructive, and of great value. The preparation and treatment of gold is treated at length and in detail. The various methods of filling, the mallets, &c., are fully and scientifically discussed.

The sections on crown and bridge work will be found useful, and to contain the best methods at present in use. The descriptions are clear, devoid of unnecessary detail and accompanied with excellent illustrations.

Reports of Societies.

STUDENTS' SOCIETY.
THE DENTAL HOSPITAL OF LONDON.

Ordinary General Meeting, held Monday, March 11th, 1889, at 7 p.m. W. HERN, Esq., *President*, in the Chair.

The minutes of the previous meeting were read and confirmed.

The President announced that the cost of printing the diagrams in the Transactions was 5s. per block, of any size up to 12 square inches.

On Casual Communications being called for, Mr. Woolf showed a lower molar with 5 distinct canals.

Mr. Hern presented to the Museum of the Society the skull of a common hedge-hog.

The President then called on Mr. Cohen for his paper on Neuralgia.

The discussion was opened by Mr. J. P. Smith, who thought Mr. Cohen had gone too widely afield in his paper. Dentists ought to concern themselves only with cases of neuralgia of purely dental origin. He had seen two cases of neuralgia due to shrinking of the bony canals after the extraction of teeth, and also a case where necrosis of the antrum was the offending cause.

The President drew attention to the importance of differentiating between neuralgia due to some central lesion, and that due to a peripheral one, a point in diagnosis being the much larger area affected in the former condition. He narrated two cases :—The first of a boy under Dr. Moxon, of Guy's, and had severe pain localised in the right half of the lower jaw. Mr. Pedley saw the case, and found the teeth to be perfect, and this being so he refused to remove any. So severe, however, was the pain that the boy himself removed with a pair of scissors the wisdom tooth, a bicuspid and the canine of this side, but there was no relief, and a subsequent post-mortem disclosed a central lesion. The second case was one in which extraction of some teeth the pulp of which was obliterated owing to wearing away by a pipe, did give temporary relief, yet subsequent signs of Trifacial paralysis showed that here again the lesion was central. He also pointed out how much more intense was the pain if a lesion be limited to only a portion of the pulp, especially is this shown when the nerve of one root of a many-rooted tooth is dead, those of others being alive.

Mr. Woolf described a case, where the sufferer tried menthol with temporary relief, and had the inferior dental nerve stretched on a subsequent occasion. Mr. Woolf had lost sight of the case.

Mr. E. Lloyd Williams emphasized the President's remarks on the intense pain with limited local pulpitis. He instanced the case of a lady aged 38, who had persistent intense neuralgia down the right face, neck, shoulder and arm. She had been under treatment for a long time. Two years ago, to eliminate dental origin, Mr. Williams removed all causes that were in the slightest degree suspicious, but the neuralgia still persists. He pointed out that cases like this disproved Mr. Cohen's assertion that a visit to the dentist was always the cure for neuralgia.

Mr. Porter did not think that age had much to do with cases of neuralgia due to local lesions.

Mr. Dolamore also spoke.

Mr. Cohen then replied.

The President then accorded the usual vote of thanks to Mr. Cohen for his paper and, to the gentlemen who brought forward casual communications and announced that the next meeting would be on Monday, May 13th, when Mr. Read would read a paper on "Syphilis, as it affected the mouth."

The proceedings then terminated.

Dental News.

LEGAL INTELLIGENCE.

Action for Damages against Dentists.

An action was brought by Harriet Jane Phillips, a dress and mantle maker, of Park Avenue, Oswestry, to recover from the defendants, Cottam and Sons, surgeon-dentists, of

Oswestry, the sum of £25 compensation for injuries arising out of an alleged unskilful extraction of a tooth. The claim was made up as follows :—Doctor's bill, £3 8s 6d ; total loss of time and salary, and board and lodging from Nov. 13th, 1888, to 15th January, 1889, and partial loss of time from the latter date until the action was brought ; extra nursing, nourishment, and other expenses, occasioned by the loss of blood, illness, and prostration caused by the defendants' negligence, £21 11s 6d. The negligence and unskilfulness of the defendants, the claim went on to say, was in fracturing plaintiff's jaw, in tearing her gums, in causing and allowing her to bleed, and doing nothing to prevent or stop the bleeding or cure the fracture, in taking up the gums with the forceps, and not properly and skilfully preparing the gums previously to the extraction of the tooth of the plaintiff, and in not doing what was necessary after the extraction to stop or prevent the loss of blood. Mr. Bott for the plaintiff in opening the case, read the statement of claim, and described the injuries alleged to have been inflicted on the plaintiff. Referring to the damages claimed, he said plaintiff was in receipt of a regular salary of £45 a year and an allowance of £5 a year for apartments. At the time plaintiff was in the service of Mr. Robert Lloyd of Glasgow House, and there she received her daily board. She lost her salary for the period of two months, while she was incapacitated, and she also lost her situation.

The plaintiff was then sworn, and said in November last she was working at Glasgow House for Mr. Robert Lloyd. On November 13 she went to the defendants' house in order to have a tooth extracted. She saw Mr. Cottam, junior, and he took out her tooth. He did not lance the gums, but at once applied the forceps. He extracted the tooth, and took up with it a part of the gums. Her gum was torn very much, and it bled very much too. She called Mr. Cottam's attention to the bleeding, and asked him to look in her mouth. He did so. She asked him if the tooth was out, and he said yes. He also said the gum would come right by-and-bye, and that the bleeding would get better. He did nothing at all to heal the gum or to stop the bleeding. She returned to her employment, and continued at it until between six and seven the same day. She then felt very ill, and went to her lodgings. In the evening she sent for a doctor. Her gums had not stopped bleeding then, but she could not say how long the bleeding continued. Ultimately Dr. Ward stopped the bleeding. She believed that Dr. Lewis also saw her, but it was Dr. Ward who stopped the bleeding. She supposed he did what he thought necessary. She believed she had lost a great deal of blood, for she was very weak. The first time she resumed work was in January. At Glasgow House she was manageress of the dress and mantle making department, and in the season she had sixteen girls under her. Did not receive her salary for the time she was away; when at work she had her meals at Glasgow House, and she also had an allowance of two shillings a week for apartments. Had been out of employment ever since, but since January 15th, she had been in business for herself. Had had four teeth extracted previously but that did not cause a similar bleeding.—Cross-examined: It was a lower tooth that was extracted, but she could not say if it was the third tooth from the end. It was on the left side. Did not tell Mr. Cottam that he had hold of the gum though she thought he had not taken hold of the tooth. A lump of flesh had risen up from the back of the other tooth. —You do not allege that he pulled that off? I do not know. It was there, but it has healed up now.—There was no unnecessary pulling as far as you could judge? Was the tooth pulled out at the first effort? Yes, with great force.—Did you have any conversation with Dr. Cartwright who examined you on February 12th, or 13th? Yes.—Had you made any complaint to Mr. Cottam between November 13th, and February 11th, when your solicitor wrote to him? No.—Not of any description? Not at all.—On February 11th, you saw your solicitor, and caused him to write a letter to Mr. Cottam? Yes.—On February 12th, Dr. Cartwright came to examine you. He examined my face and the inside of my mouth. I did not tell him anything. He asked if he might be allowed to look into my mouth.—Did he ask a number of questions? I do not remember.—Do you remember whether the bleeding came from the socket of the tooth or from the gums? I do not. Did Dr. Cartwright ask you whether you were able to tell whether the bleeding came from the socket or from the gums? I do not remember.—Did he ask whether the pain had been very violent at the time of the extraction, and whether you complained at the time? I do not remember.—And did you say you made no complaint? Do you mean the blood was flowing freely when you left the surgery? Yes, and nothing was done to stop it. I used lots of handkerchiefs.—Did Mr. Ward give you a lotion? Nothing whatever.

Did he bandage the jaw? No.—Not at any time? No. I am asking as to Mr. Ward? The Plaintiff: I beg your pardon. I thought you meant Mr. Cottam. My tooth was extracted about 3-30 p.m. on the Tuesday. On Wednesday my face was bandaged. I do not remember whether prior to that Mr. Ward had put cotton wool in my mouth and pressed it down.—Were you in bed all the time? Yes. I was not able to do anything.—Did you walk out? I walked out when I was able to, and when Dr. Ward gave me permission.—Mr. Cottam is a dentist, and presumably, skilled. Why did not you go to him and complain of what had been done? I thought it best to put it in the hands of a solicitor.

Replying to Mr. Douglas, plaintiff said her lodgings were about a quarter of an hour's walk from defendants'.

Mr. Richard Henry Ward, L.R.C.P. and L.R.C.S., Edinburg, said he was assistant to Dr. Lewis. He was called in to see the plaintiff. He looked into her mouth, and at first he naturally thought she was suffering from the ordinary bleeding after the extraction of a tooth. That was his first impression, but on examining the mouth more carefully, and after taking measures to prevent the bleeding, he found the bleeding arose not from the tooth cavity to any large extent, but from the edges of the gums on either side of the place where the tooth had been. He thought that in extracting the tooth the edges of the gums had been torn away. The bleeding was not stopped until the Wednesday night. The quantity of blood lost was a large quantity, sufficient to interfere with the health of the patient. When first called in, took the usual measures of plugging the tooth cavity, and covering over the gums with a solution of perchloride of iron to stop the bleeding. Next day, put a pad of lint in her mouth between the upper tooth and the cavity of the extracted tooth, and firmly bandaged the jaws so that the pressure from the pad of lint might stay the bleeding. He forgot whether he used ice or not. Attended her on the Wednesday, as the measures taken for staying the bleeding had not been successful; and we had a conplaintiff for some considerable time. Cross-examination by Mr. Douglas: As I understand, what you complain of as having been improperly done was taking a little bit of the gum away? I can hardly explain it, but there is a portion of the gum on either side of the tooth that fits on to it.—And if that is torn there is a little bleeding? Yes, but in this case it was not a small portion that was torn.—Beyond this tearing of the gum, whether great or small, was there anything you noticed? Nothing at all. The jawbone was certainly not fractured.

His Honour asked if Mr. Bott was not going to call any dentist?

Mr. Bott said no. He was instructed far too long after the matter had taken place to have an opportunity of getting a dentist to inspect the condition of things so as to be of any use; and he submitted that any dentist who had only seen his client that morning could give evidence of no value except as to whether the method of extracting the tooth was a proper method. The doctor said it was not.

Mr. Douglas cross-examining Mr. Ward. The doctor said he treated plaintiff with perchloride of iron.—Do you know that is very objectionable treatment. In the book I have a weak solution is given as the treatment?—Mr. Douglas quoted Tomes, to the effect that perchloride of iron was objectionable, because it exaggerated the wound and caused inflammation.—The witness said he did not use perchloride of iron, but a very weak solution of it. The part did not become at all more irritable after he used it. It certainly got better.

Mr. Douglas submitted that there was no evidence of negligence to go to the jury. The doctor, who was not present when the tooth was extracted, simply deposed to the fact that there was some tearing of the gums, but no dentist was called, or any other evidence given to show that that condition might not have arisen with the most skilful operation. He had abundance of evidence—dentists from Liverpool, Chester, and Shrewsbury—all of whom were prepared to say the extraction was a skilful one; but he submitted that the time of the Court should not be wasted by going on with the case.

His Honour said he was clearly of opinion that there was no case whatever to go to the jury. It was the plaintiff's fault entirely that she did not go to the defendants immediately she found the bleeding was going on. It was perfectly clear that any dentist, respectable, as he presumed the defendants were—of course, he did not know any of the parties that came before, and therefore he only decided according to the evidence—would have gone to see a patient on hearing that she was too ill to go out. Moreover, plaintiff's own evidence did not show any want of skill on the part of the defendants, and there was no evidence called to show any want of skill. In those circumstances he thought he would be unfair to call on the defendants for any defence—in fact there could be no defence because there was no case. He must therefore order a non-suit.

Mr. Douglas applied for the conference fee of council which was granted.

Messrs. Minshalls and Parry Jones write :—" Sir,—As the plaintiff and her witnesses only were heard on Saturday last, we think it just to our clients that the public should know that if the case had gone on, we should have called as witnesses —besides Mr. T. M. Cottam—Dr. Cartwright, of Oswestry and the following dentists :—Mr. Harding of Shrewsbury, Mr. Johnson of Chester, Mr. Moore of Stockport, and Mr. Waite of Liverpool, all of whom (after considering all the charges made and examining the plaintiff's mouth) would have given evidence that our clients were in no way responsible for the bleeding or subsequent illness from which plaintiff suffered.

The public will notice that the most serious charge made by the plaintiff—that defendants had broken her jaw—was denied even by her own medical man.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

WHITE FILLINGS.

To the Editor of the " British Journal of Dental Science."

SIR,—Allow me to correct a very serious error made by Mr. Whitehouse, in his reference to quick-drying varnishes and their resistance to water. His error has evidently arisen partly through experimenting on perfectly dry surfaces which rarely, if ever, exist in the mouth under ordinary conditions, and partly owing to his having experimented with common spirit varnishes instead of those made with ether. The "waterproof" varnish he recommends, which I take to mean a solution of gutta-percha in chloroform, is waterproof only if applied on a perfectly dry surface, and it has the very strong objection of being liable to lift away bodily. If Mr. Whitehouse will take the trouble to test, under any conditions he chooses, my copal ether varnish, he will find that it will penetrate and render perfectly waterproof, a surface which is saturated with moisture, driving the water before it out of the substance, without combining or mixing in any way, leaving a surface absolutely free from moisture. Further than this, it cannot be pealed off or removed by any means short of a chisel or file, as it leaves a surface which water will not touch, a drop of water placed on the surface of this varnish will roll off without leaving a trace of its presence. This varnish having the rare quality of adhering with the utmost tenacity to any surface, wet or dry, and at the same time absolutely waterproof, has in itself every desirable quality for operators, and from the remarks of Mr. Whitehouse is evidently unknown to him; spirit varnishes, which are decomposed by water, are totally useless in the mouth, and it is evident that the remarks which apparently condemn all, refer only to these.

THOS. FLETCHER, F.C.S.

Warrington.

Hospital Reports.

MONTHLY STATEMENT of operations performed at the Dental Hospital of London, Leicester Square, from Feb. 1st to Feb. 28th, 1889:—

Extractions	Children under 14	535
	Adults	945
	Under Nitrous Oxide	814
Gold Stoppings		429
Other Stoppings		2487
Advice		187
Irregularities of the Teeth		161
Micellaneous and Dressings		502
Total		6060

F. A. HARSANT,
T. E. CONSTANT,
J. P. SMITH,
House Surgeons.

Work done at the Victoria Dental Hospital of Manchester during the month of February, 1889:—

Number of Patients attended		908
Extractions	Children under 14	660
	Adults	
	Under Nitrous Oxide	101
Gold Stoppings		60
Other Stoppings		85
Miscellaneous		235
Total		1141

P. A. LINNELL, *House Surgeon.*

British Journal of Dental Science.

No. 510. LONDON, MAY 1st, 1889. Vol. XXXII.

CLOSURE OF THE JAWS FROM ANKYLOSIS OF TEMPERO-MAXILLARY JOINT. EXCISION OF THE CONDYLE.

By Frederick Page, F.R.C.S., Honorary Surgeon to the Royal Infirmary, Newcastle-upon-Tyne ; Examiner on Clinical Surgery, University of Edinburgh ; Lecturer on Medical Jurisprudence in the University of Durham.

The following cases illustrating the troublesome affection—closure of the Jaws and the treatment most useful, present many points of interest to dentists.

Case I.—J. C., a well-grown, healthy-looking boy, aged 13 years, came under my care, February 24th, 1887,* suffering considerable inconvenience from inability to open his mouth. Four years ago, he suffered from what was considered to be an attack of measles, followed by long continued purulent discharge from both ears, but more abundant, and longer continued, from the left. The power of opening his mouth had, during the last two years, been gradually curtailed, until, on admission to the Newcastle-upon-Tyne Royal Infirmary, he was only able to separate his jaws to a very slight extent. The front teeth in the upper jaw were pushed forward by the action of the tongue. He had no lateral movement of the jaw, and what solid food he took he was accustomed to cut into very small pieces, which he insinuated between the teeth, and swallowed without mastication. The left side of the face, beneath the zygoma, was fuller than the right. All discharge from the ears had ceased for some months.

A determined attempt, under chloroform, was made to force the jaws asunder with gags, but the result was not satisfactory, and it was followed by severe constitutional disturbance, and by much pain and swelling of the left side of the face, the right being unaffected, I came to the conclusion that there was disease of the left tempero-maxillary articulation, likely, at no distant date, to cause complete bony ankylosis, and determined to form a false joint by excising a portion of the neck of the jaw. On March 26th, the boy being in his usual good health, an incision an inch-and-a-quarter in length was made along the inferior margin of the zygoma down to the condyle, but it was found necessary to supplement this by another at right angles to it, and three-quarters-of-an-inch long. By these incisions, the neck of the bone was exposed, and, with some difficulty, divided, partly with Adam's saw, partly with bone pliers, and a piece removed. Still the mouth could not be freely opened. The condyle was firmly fixed to the skull. Mc.Ewen's chisel was carefully driven through the line of articulation, and the condyle dissected out. The mouth could then be freely opened, and there was a good space between the temporal bone and the jaw. The bleeding was slight. Some facial paralysis followed, but passed off in a few days. The wound healed readily, with the exception of a sinus, through which small particles of bone were, from time to time, discharged. The power to chew was at once established, and the lad masticated solid food the day after the operation. Three weeks later, he had the full use of his jaw, and could eat without difficulty a hospital chop which Mr. Treves, who then saw the patient, considered a very fair test of his chewing capacity.

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*See the Transactions of the Northumberland and Durham Medical Society, October, 1887.

The removed condyle has a peculiar appearance. It is much enlarged, quite free from cartilage, and its surface extensively and deeply eroded. No one has recognized it as the condyle of the lower jaw.

Seven months after operation, leaves nothing to be desired, He can open his mouth wide enough, and he has no inconvenience in eating.

In the *Britsh Medical Journal*, January, 1886, Professor Humphrey published, a case of ankylosis of the jaw treated most successfully by excision. That but few other cases have been recorded is due, partly, no doubt, to the rarity of disease of the tempero-maxillary articulation, and partly to such cases being treated by some other method than excision. My chief object in reporting this case is to draw attention to the advantages of excision of the condyle, as compared with the establishment of a false joint, by division of the ramus, or of the neck of the lower jaw. Excision, no doubt, is a somewhat troublesome operation, but it gives rise to excellent results, and entails no subsequent painful movements of the jaw, such as must follow simple division, in order that a new joint may be maintained. Esmarch's plan of removing a wedge of bone, so as to form an artificial joint in front of the masseter muscle, when performed for the closure of the jaw, due to interarticular disease, seems to me to be a more severe and less surgical procedure than excision of the condyle. Professor Ewing Mears, of Philadelphia, divides the ramus of the jaw, and removes the condyle with the coronoid process and sigmoid notch by means of an incision inside of the mouth. I should look upon his operation as very much more severe and difficult than excision of the condyle from the outside. I gathered, however, from Professor Mears, with whom I lately had an

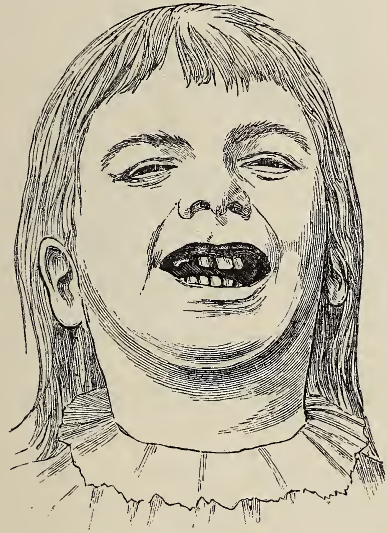

Fig. 1.

opportunity of talking on the subject, that he considered his method had great advantages. Whether, however, an external or an internal incision be adopted, I see no valid reason why the well-established practice of excising a diseased or ankylosed joint should be departed from in cases of closure of the jaws from interarticular disease, and, on the contrary, many reasons why it should be the rule of practice.

Case II.—A fair complexioned, delicate-looking girl, aged 9, was admitted under my care last February with a fixation of the mouth from bony ankylosis of the right temporo-maxillary articulation. When 2 years old, she suffered from measles, followed by profuse and long-continued discharge from the right ear. "Six months after a gradual closing of the mouth was noticed. For six years there had been little or no motion of the jaw." On admission the child's mouth was fixed in the position shown in the wood-cut.

Two years ago an attempt was made to force the mouth open, but it was not successful. It was proposed, and under the consideration of the parents, to cut away the incisor teeth level with the gums to facilitate the introduction of food into the mouth.

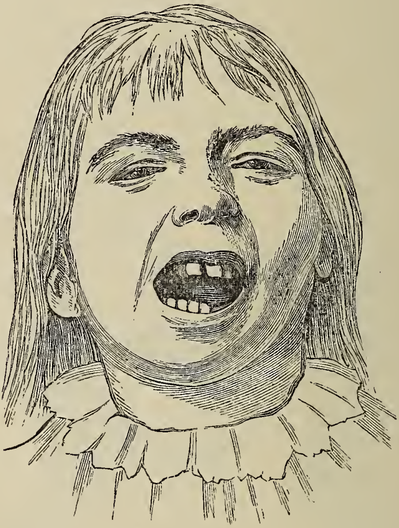

Fig. 2.

On March 5th the lower jaw was exposed on the right side by a single semilunar incision, rather more than an inch in length, a little below and parallel to the zygoma. The lower jaw was firmly welded to the skull. With a chisel and mallet a section of the bone was made, running obliquely downwards and backwards, from the centre of the sigmoid notch. Then the connection with the skull was by the same means severed, and the portion of the bone thus separated removed. The mouth could then be opened. Very little bleeding accompanied the operation. For a few days the right eye could not be quite closed. The wound healed rapidly, and the child suffered very little inconvenience from the operation.

The woodcut below was made from a photograph taken seven months after the operation, and shows the extent to which the mouth can be opened now.

In this case the lower jaw being ill-developed, the chin does not come well forward, while the mouth is somewhat twisted.

XVIIth. CONGRESS OF THE GERMAN SURGICAL SOCIETY OF BERLIN.

New Method of Resecting the Jaw.—Treatment of Ankylosed Jaw.

Mr. Lobker, of Greifswald, proposed the following method to avoid a breach of continuity in cases of resection of the lower jaws for malignant new growths. The lower jaw is completely divided along its lower border, from front to back, by means of a hammer and chisel, and separated into two shells ; the maxillary artery is then ligatured, the tumour excised and the bony lamellæ seared with the galvano cautery. The flaps of soft tissues remain open so as to keep the wound well under view should a recurrence take place. A patient was shown in whom the division of the jaw had been performed for the removal of a sarcomatous tumour, and had given a good result, insomuch that the teeth had all been preserved in the jaw operated on. Notwithstanding the favourable result in the case Professor von Bergmann, of Berlin, could not recommend the method proposed by Lobker, for a recurrence is certain in cases of sarcoma as shown by the patient he brought under their notice four years ago. The patient returned at the end of twelve months with recurrence of the growth which made it necessary to disarticulate the greater portion of the lower jaw. As yet the growth has not reformed and the patient wears an artificial apparatus by Sauer, which makes up for the missing portion of the jaw.

Mr. Theim, of Coltbus, read a paper on seven cases of dislocation of the jaw backwards which he had met with in the persons of five women in the course of two years. The opinion expressed in most surgical treatises that dislocation of the lower jaw backwards cannot occur without simultaneous fracture, holds good only in the case of men, not of women, and this depends upon the following anatomical difference : in the skull of men, the os tympanicum extends a long way backwards, as far as the mastoid process ; in women it only reaches half the distance. We thus have a lateral bony protuberance over which the condyloid process slides in a hollow, which might very conveniently be called the tympanico-stylomastoid fossa. It is limited in front by the tympanic tubercle, behind by the mastoid process, on the inner side by the styloid process, and above by the lower wall of the auditory apparatus. The dislocation occurs in the case of grown up persons by the upward and backward action of the temporal muscle acting on the obtuse angle of the jaw ; it does not happen in the case of young children, or in very old persons because in their case the angle is almost absent and the action of the temporal muscle is directly upwards.

The rare affection first described by Guèrin, in 1840 ; by Smith, in 1841, under the name of congenital affection is not so uncommon and appears to have often been confounded with trismus and pseudo-trismus, as well as with ankylosis of the jaw.

Mr. Küster, of Berlin, followed with a paper on ankylosis of the articulation of the jaw, and showed patients with this affection.

In the four cases exhibited, Küster had succeeded in affecting a cure by means of an original, and as yet undescribed method. The first case is that of a young woman, aged 18, in whom a resection of the left maxillary articulation was performed for a closure of the jaw, the result of typhus and measles. The second case was that of a young boy, aged 14, with a remarkably small jaw bone. For two years he had been troubled with suppuration in the neighbourhood of the jaw ; in 1887 both the joints were resected and the coronoid processes sawn through. Symptoms of suffocation came on during the operation and it became necessary to perform tracheotomy. The result in this case was more and more unfavourable as time wore on. On the other hand, the result was a permanent success in the third patient a boy of nine, in whom owing to ankylosis of both joints the result of diphtheria and suppuration of the ear, both articular processes and one coronoid process were removed with the chisel and hammer. The fourth case was operated by Pauly, of Posen, on both sides and it can hardly be said that the result was very successful. Ankylosis of the jaw may depend upon one of three causes : it may result from osteomyelitis, or a complicated fracture of the ascending ramus ; secondly, from a purulent inflammation of the ear supervening on an infectious disease : or, lastly, it may be the outcome of a general diathesis such as rheumatism, arthritis deformans or tuberculosis. The two first groups call for resection oftener than the third.

Two forms of disease may be included under the name of ankylosis of the jaw ; one is a total melting together of the two osseous surfaces, the other is a shrinking of the capsule of the joint a slight degree of movement being retained. The bird-like appearance of the four patients exhibited and which depended upon the small size of their jaw cannot always be ascribed to atrophy due to inactivity, for the atrophy of the jaw is often found on the side opposite to the affected joint ; some cases must be looked upon as an arrest of development. The operation performed by Küster was not that proposed by König, viz. an horizontal incision below the zygomatic process, but a special process of his own. It presents several advantages over the former ; first, it gives more room ; secondly, it is a subperiosteal operation, and this allows of the re-formation of a new head to the bone ; thirdly, it enables you to remove the whole of the coronoid process, and thus prevents a relapse ; fourthly, it excludes the possibility of your wounding the branches of the facial nerve as happens in König's method.

An incision is begun at a point 1 to 1½ centimetres in front and extended to two centimetres behind the angle of the jaw ; the tissues are carefully separated so as to avoid wounding the facial artery, and the periosteum is then separated on either side. The chisel is then applied directly to the posterior border of the masseter. In the case of a bony ankylosis caution must be used during the chiselling of the head of the bone, for the thin scale of bone at the base of the skull may very easily be broken through, the resection of both heads of the jaw may be followed by threatenings of suffocation ; it is important, therefore, not to omit to pass a loop of thread through the tongue. During the after treatment it is advisable to insert pieces of wood between the jaws.

Dr. Konig fully recognised the value of Küster's incision in similar cases of ligamentous growths, but not in those of bony ankylosis. His old transverse incisions, the one to be recommended if we wish to escape the danger of opening the skull, more especially if it be combined with the vertical incision running upwards and backwards, which he now advises. The functional result was favourable in those cases only in which the patient was able to eat immediately after the operation, not in others ; and the cause of this failure of function may be sought in the muscular atrophy and cicatricial shrinking. Dilators should always be used in such cases.

Dr. Rose, of Berlin, had been obliged in two cases of ankylosis of the jaw to remove, not only the articular heads, but also the abnormally developed coronoid processes as well as the styloid processes. These latter cases are of congenital origin.

THE ADVANTAGES OF A FEW METHODS OF GOLD FILLING.*

By Geo. O. Whittaker, L.D.S., Eng.
Dental Surgeon, Victoria Dental Hospital, and Hospital for Consumption and Diseases of the Throat, Manchester.

Mr. President and Gentlemen,

In choosing Gold Fillings as the subject for my paper this evening, I do so, not with the object of introducing anything new, but with the hope of gleaning fresh ideas by raising a good discussion amongst the members of this Society.

Before entering upon the merits of a few different methods of gold filling, I purpose venturing a few remarks on the shaping of the cavities of the teeth preparatory to filling, for on their careful preparation depends in a great measure the future success of the operation. I have prepared a few typical cavities, which I submit for your inspection.

The first :—A Crown cavity in an upper molar tooth.

The second :—An interstitial or approximal cavity in an upper bicuspid.

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*A Paper read before the Odontological Society of Manchester.

The third :—An interstitial cavity in a central incisor. Commence by opening up the cavity of the molar with enamel chisels and burs.

To break away quickly any overhanging piece of enamel in the direction required, a very good method is that of scratching the surface of the enamel in line with the intended cut, then by putting pressure on same, it will be found to break away easily. Then remove soft tissue, wash out with warm water, afterwards applying the rubber-dam in the usual way. This I consider a much less wearisome process for the patient than by applying the rubber-dam at the outset of the operation, and I believe also, that the cavity is more quickly prepared.

In shaping the cavity I strongly advocate the breaking away of all overhanging edges, making the walls as parallel as possible, avoiding all angles and sharp corners, smoothing the edges with very sharp enamel chisels and fine burs. When I come to the filling, I shall have a word to say with regard to the cavities of sensitive teeth, and cases where it is advisable to preserve weak walls.

We will now take an interstitial or approximal cavity of an upper bicuspid. In the majority of cases, it is advisable to cut down from the crown, in most instances including the fissure ; by so doing a better anchorage is obtained for your filling, and the avoidance of a fresh nucleus for decay. Shape the cavity by sloping the walls like a carpenter's dovetail, so that the lingual and buccal walls shall converge in the direction of the neighbouring tooth and diverge in the upward direction. Cut the lingual and buccal walls away sufficiently, thereby preventing the coming in contact with the adjoining tooth when filled, and allowing the edges to be kept clean by the tongue and the application of the tooth brush. It is advisable to have the cervical wall perfectly flat, and if it is near the termination of the enamel, cut deeper down, or remove the enamel, as it is liable to chip off during filling. I hand round a few excavators which I find the most useful in finishing off the cervical wall of such a cavity as mentioned above. If the decay extends beneath the gum, the rubber strips which I submit for your inspection, are well adapted for separating the teeth, and driving the gum away by allowing the broad side of the triangular piece to press against it. The gum will resume its normal position a few days afterwards, thereby covering the edge of the filling, and preventing the lodgment of any decomposing matter.

In the third case which I have named, the teeth are often found in very close contact or overlapping one another, decay being seldom found in teeth slightly separated one from another. It is then requisite to separate the teeth or break away part of the lingual wall, and thus be in a position to operate from behind. Several methods are useful in separating the teeth, such as wooden wedges, cotton tape, rubber, cotton wool, Perry's separator, &c., &c. By wedging a piece of tape between the teeth it imbibes moisture, and after a few hours swells, and slightly separates the teeth. Instruct your patient to renew the tape each evening, adding on each occasion an extra layer until there are four. Supposing the teeth overlap, it is then advisable to have five or six layers if necessary.

I have already alluded to the method of using rubber strips, and to a third method I should like to draw your attention; it is that of using Perry's separator. This you will find very efficacious where patients come a long distance, and time does not permit of separating by other methods. This I find the most universal form of separator, and to more forcibly illustrate its advantages, I hand round a plaster model shewing the seperator in position. Those gentlemen who are in the habit of injecting cocaine, will be enabled by its use to separate the teeth painlessly.

In the majority of cases it is advisable to break away the lingual wall; and in excavating the cavity, if possible, to always leave the enamel supported by dentine. Then smooth the edges with enamel chisels and cuttle fish disks, afterwards separating the teeth sufficiently to get in a matrix. By slackening the separator the matrix is held in position between the teeth, forming an approximation to a crown cavity, but it will require a slightly different mode of filling. You will find that it is not advisable to use a matrix where it has been necessary to cut away a weak labial wall.

You will notice in the central incisor which I handed round, that the cervical wall is quite flat, with an inclination towards the apex of the root, and the opposing point, with an inclination towards the centre of the cutting edge, as I do not consider it advisable in gold filling to have a groove in the cervical wall.

Having thus described the preparation of the cavities, I now propose to discuss the merits of Gold and its combination with other substances, such as tin, amalgam and osteo-plastic fillings, forming the four different classes of fillings, *Gold, Gold and Tin, Gold and Amalgam, Gold and Osteo-plastic.*

We will take them in the order named :—Gold alone is best adapted for all crown cavities which are not very deep and where the walls have been made parallel and strong. In this class of cavity you will find it advisable to use cylinders. These arrange in perpendicular rows at the distal wall of the cavity, having them of such a length that one end rests on the floor of the cavity and the other end reaching slightly above the wall of the cavity. When placing the cylinders in position in rows, slightly flatten each with the tweezers, which will enable you to get in that particular row a few more than would otherwise be the case ; the object being that the cylinders when pressed at the front by a suitably strong foot plugger are driven more tightly to the side walls. Follow up the placing of these rows of cylinders, continually pressing first at one end of the side of the row, then at the other, then at the middle. Pursue this course until the cavity is nearly full, keeping the rows of cylinders perfectly parallel, as you proceed, using the mallet to assist in condensing. Then arrange a few cylinders around the remaining walls of the cavity, pressing them well against the sides by using what is known as a Lord's plugger (a specimen of which I submit to your inspection) finishing off the cavity with cohesive gold.

Supposing the filling to have been well condensed as described, very little impression can be made on the surface ; then grind down with corundum wheels or finishing burs, and finally polish.

The great advantage secured by having the cylinders parallel and non-cohesive is that the harder the patient presses upon the filling the tighter it goes to the wall of the cavity, whereas by building up cohesively from the floor, there is a tendency to roll away from the walls ; and again, in pressing the plugger on the gold close to the edges of the cavity, great risk is run of chipping the enamel, besides the taking a longer time to fill.

In cavities where there are only two walls it is advisable to commence with retaining points and build up the contour throughout with cohesive gold foil, which in back teeth makes a splendid filling. I do not, however, believe in building up, say, half a front tooth with gold, more especially in teeth where the nerve has been devitalized.

To the common observer such fillings look most unsightly, and besides may only last a short time. In such cases I hold the opinion that the best course to take is to cut off the crown of the tooth and pivot.

Another method of introducing the gold, and which recently attracted great attention, was that proposed by Dr. Herbst. It consists in moulding the gold to the walls of the cavity by the aid of rapidly rotating burnishers. By this method tho adaptation of the gold is beautifully close and the filling withstands the ink test, but the specific gravity is less than the malleted plugs. Still I believe that they are of sufficient density for anything save contouring.

Time will not permit of mentioning the few other different methods of introducing gold alone, therefore I purpose discussing the combined methods, but before entering upon the merits of Tin and Gold, I should like to venture a few remarks as to the originator of this method.

Referring to the August number of the *British Dental Association Journal*, you will see amongst the correspondence that Mr. J. W. Lomax claims to be the first to use this combination, and dates his commencement from 1845-6.

A short time since I was discussing with Mr. H. Campion the merits of tin and gold fillings, and he casually made the remark that Mr. Thomas Sheffield, of Exeter, had used this method before the date mentioned by Mr. Lomax, Mr. Campion being a pupil of Mr. Sheffield at the time.

I have here a letter from Mr. A. T. Woodhouse, of London, who also was a pupil of Mr. Sheffield at the time, and which letter you will see confirms Mr. Campion's statements, the letter reads as follows :—

1, Hanover Square, London, W.
March 15th, 1889.

Dear Campion,

My attention has been drawn to the correspondence on Tin and Gold Filling in the *British Dental Association Journal* for August, 1888, and I see that Mr. Lomax there claims to have been the first to use this kind of stopping, and dates the commencement of its use by him as about 1845-6. If there be any credit due to the introduction of the combined stopping it should be given to the right man.

I was articled to Mr. Thomas Sheffield, of Exeter, in Feb. 1842, and he was then using, and had used for years, Tin and Gold for filling teeth, and you and I have as his pupils adopted his method in our practice ever since.

Mr. Lloyd, of Liverpool, who died at least twenty years ago also used it for many years; we used to send our patients to each other, and I had abundant opportunity of inspecting his work. I only trouble you with this to put the history of the plan right. I may say nothing of its advantages, the fact that we use it, will be a proof of our approval. You may make what use of this letter you like.

Ever your sincere friend,
A. J. Woodhouse.

Of course,gentlemen,I do not mean to imply that Mr. Lomax did not conceive the notion himself, but I do not think that he was the first to use the combined method of Tin and Gold, and if there be any honour attached, I believe in giving honour to whom honour is due.

The combination of Tin and Gold I think you will find the most valuable stopping—we will suppose that we have to fill a tooth, say the approximal cavity in the bicuspid which I brought to your notice at the commencement.

Preparatory to filling (if not using cylinders) commence by twisting a sheet of tin foil into rope form, afterwards cutting the same into suitably small lengths. Pack into the cavity, commencing at one end of the cervical wall and working along the floor of the cavity by a series of folds, until the other end is reached, bearing in mind to keep the tin well over the cervical edge, then continue the filling with gold and tin for a short distance, finally using cohesive gold foil to build up the contour of the tooth, using the mallet or hand pressure, as may be preferred, and working the gold solidly into the fissure, the mallet being preferable for building up the contour.

By this combined method, I claim that the operation of filling can be performed more quickly and more perfectly than by gold alone. The close relationship of the tin to the cervical wall preserves the tooth structures I believe more perfectly than gold. Being softer it can be worked into closer contact to the walls, not possessing that rebounding action (if you will allow the expression) which gold has; again it is easier to finish off the cervical edge, thus enabling you to get the gold contour pressing against the adjoining tooth ; for as you are all aware, it is essential for the future preservation of the filling, to avoid the edges pressing against the neighbouring tooth. We now will imagine that it is required to fill, in a central tooth, a cavity similar to the one in the specimen before us.

In this case we will suppose that you have the matrix and the rubber dam in position, having previously rolled together a sheet of tin and gold, or a sheet of tin between two of gold, making a rope as before mentioned. Then proceed to fill against the cervical wall, keeping the filling perfectly flat and well against the matrix and the labial wall of the cavity. I lay special emphasis on this latter point. After having filled about a third of the cavity, continue with gold alone, uilding up nearly the whole of the cavity.

Then with a curved plugger fill the opposing point, afterwards wedging small pieces of gold tape between the two, making sure to get them in close contact with the outer wall, this later being one of the most important points of the whole process. I have brought with me several pluggers of patterns which I find the best adapted for the purpose. By this method the gold is inserted in the direction it will be used for mastication and the consequent saving of pain to the patient, through not having had to separate the teeth.

With your permission I will trouble you with mention of a plan which I adopt when filling front teeeth, and which Iconsider a quicker and more cleanly way of getting through the operation.

Cut a small piece of rubber-dam about two inches square, punch holes and press over the teeth, using a narrow burnisher or waxed silk, if necessary, to drive under the gums. Arrange the napkin behind the teeth to preserve the gold from the moisture of the breath.

With a little practice, the mirror, napkin and rubber can be held in position easily and effectively.

This way effects great saving of time, and so far as my experience goes, is much preferred by the patient, allowing the retractors and weights to be dispensed with (a point of great consideration with lady patients) and preventing the saliva running around the mouth and cheeks.

I am aware of the disadvantages in connection with this method, but I think its advantages predominate.

In sensitive teeth, where much pain would be caused in shaping of the cavity and where deep penetrating caries exist, fill up all inequalites with tin, thus saving time ; not only so, but the patient will not feel the thermal changes so much as would be the case with gold alone.

I will not venture to state what action the saliva has upon the tin, but from observation in cases where the tin and gold had been used conjointly, the tin appeared to have become remarkably hard and preserved the tooth much better than gold. I have in my mind a molar tooth which I refilled for a patient a short time ago, and which tooth had been stopped by an eminent dentist seventeen years previously, one part of the cavity containing tin was perfect, but the part containing gold had failed. Several similar cases have since come under my observation, and I strongly believe that tin preserves the teeth better than gold.

We now arrive at the third class of combined fillings, viz : gold and amalgam. We all know how difficult it is to fill and nicely finish with gold distal cavities of back teeth, more especially where the decay has extended beneath the gum, and how tempted we are to insert an amalgam filling, the masticating surface of which is quickly worn away.

If the tooth be filled with amalgam some distance above the cervical edge, and a matrix is used to keep the contour, it will enable the amalgam to be got solid as possible. Then trim the edges of the filling whilst soft, making an appointment for a future day to finish off with gold. I have here a Ladmore-Brunton clamp and matrix, which I find most useful for amalgam fillings of this description. Any shape of matrix can be made out of an old clock spring.

Another method is to fill the tooth with amalgam and gold at the same sitting, but as it was referred to at the last Meeting of this Society, I will not take up your time by going over the same ground again. You will find a good description of the method in the *Dental Cosmos* of December, 1888.

In cavities where it is intended to use amalgam, it is not advisable to have the lower part of the cavity of so square a character as for gold, the amalgam having a tendency to assume a spherical form.

In the fourth and last class of filling mentioned my experience teaches me that fossiline is the best of all Osteo-plastic Fillings.

It is most useful in cases where the pulp is nearly exposed, and will not admit of great pressure and is subject to thermal changes. The fossiline can be worked into close contact with a weak labial wall, which you find essential in some cases to preserve in order to keep a good shaped tooth. Not only has it these advantages, but a better coloured tooth is ensured when finished than would be the case if gold or tin were alone used. The fossiline to be inserted as in ordinary cases, then build over with gold.

In conclusion, gentlemen, I thank you for the kind attention you have given me. I know that I have done but scant justice to the few different methods of gold filling, but time would not permit me to enter more fully into the matter, and my desire was to call attention to the few different points bearing on this subject. For instance, I would have liked to have contrasted the advantages of the different kinds of mallet now in use, but I trust the discussion which may follow will bring out other points I have omitted, for with all of us, this is an intensely interesting as well as a very practical subject.

DENTAL EDUCATION AT HARVARD.

By Thos. G. Read, L.D.S., Eng., D.M.D., Harvard.
Assistant Dental Surgeon to the National Dental Hospital.

The full course of the Dental Department of the Harvard University, which is acknowledged to be the best in America is three years.

The first year is identical with that of the medical course, which is also one of three years ; all students having to attend the same lectures on Anatomy, Physiology, and Chemistry at the Medical School, in which subjects they must pass a satisfactory examination before proceeding with the second and third year's studies. The remaining two years are spent in the Dental Infirmary.

The advantage of thus dividing the course are, that during the first year the student gleans a general knowledge of Anatomy, Physiology and Chemistry, probably dropping into habits of steady reading ; when he begins the purely dental subjects he is able to grasp them with greater facility than if he had passed through no preliminary training, having few subjects to study at the same time, there is a great chance of his mastering each, and by working with the medical students at the same studies, during the first year, it tends to promote a healthy competition, and unites these branches of the profession closer than if there had been no such association at the commencement of their professional career.

During the second and third years the students attend lectures on General Surgery and Pathology, Operative and Mechanical Dentistry, Dental Materia Medica, Pathology and Therapeutics, Oral Pathology and Anatomy, Cleft Palates and Cognate Diseases and Orthodontia.

Lectures usually last an hour, the first quarter of which the professor devotes to asking question upon the subject of the previous one ; this stimulates the students to read up their notes, few liking to appear ignorant in public.

All spare time during the morning is passed in the Mechanical Laboratory, making dentures in vulcanite, celluloid, metal, and continuous gum for poor people.

The afternoon is devoted to such operations in the mouth, as treating, filling, crowning and extracting. The Operative Staff consists of the Professor, five Instructors (one for each day, no work being done in the afternoon on Saturday), and a Demonstrator.

The above staff is supplemented by brilliant men being invited to hold clinics periodically on whatever subject they are most proficient in ; thus the school obtains the services of men whose practice does not admit of frequent attendance.

Each day the Instructor on duty records in a note-book he keeps for the purpose, the work done by each student and marks according to merit.

Occasionally a general meeting of the Operative Staff takes place, at which the work and conduct of the students are discussed. The Professor, if he thinks fit informing the student concerned of any suggestion or complaint made.

The above system enables each instructor to go systematically through all the important operations in the mouth and causes the student to strive for a high standard as to quality, all being practically examination work, there is no examination in practical operative or mechanical dentistry for the degree, but the grand average of the Instructors marks counting for a pass.

At the end of the course each professor has a written examination on the subject of his lectures.

It is necessary to obtain pass marks in all the subjects of xamination before receiving a diploma.

CASUAL COMMUNICATIONS.

Contributed before the Odontological Society of Great Britain.

Mr. William Hern reported a case of embedded denture in the lower jaw, causing loss of function of the right gustatory nerve.

He said : The case is interesting, not only for its rarity, but also on account of the exceptional lesion connected with it.

Jane B., æt. forty-five, came under my care on May 8th, 1888, when she presented herself at the Dental Hospital of London, and complained of something being amiss with the tongue and mouth, although not of much pain. Patient, whose mouth and breath were very fœtid and offensive, was wearing a partial set of teeth with springs, which she states "has not been removed for about ten years." Her husband having a very strong objection to artificial teeth, she was afraid to remove them, for fear of betraying the secret. The upper plate was of vulcanite and almost complete ; the lower plate of dental alloy carrying one molar and two front teeth on the left side only.

On looking into the mouth without a mirror, hardly any portion of the lower plate could be seen, as a large mass of granulations under the tongue obscured the central portion, while the sides were so deeply embedded that the springs appeared to work out of the gum and granulation tissue.

On examining the mouth with a mirror, portions of a metallic plate could be seen between the exuberant granulations ; this plate had slipped downwards, backwards, and to the right of its original position, in such a manner as to cut through the frænum of the tongue and to imbed itself deeply into the floor of the mouth and the inner surface of the ramus and body of the lower jaw on the right side.

The right anterior pillar of the fauces was also cut through at its junction with the tongue.

The right half of the tongue is quite insensitive to tactile sensations ; it is also wanting in the special sense of taste when tested with salt, sugar, and sulphate of copper. There is no anæsthesia of lip or gums on that side.

The springs were cut, and the upper plate easily removed, but the lower one with considerable difficulty, accompanied with a good deal of pain and somewhat free hæmorrhage.

The patient has been seen from time to time since; the wound of the mouth was healed, and the granulations and induration about the frænum of the tongue have disappeared.

Sensations of touch and taste have to some extent returned, but are very incomplete at present. Patient complains of a sense of tingling occasionally near the tip of the tongue on the right side.

(At one of the visits of the patient, subsequent to the removal of the plate, a white cord was noticed on opening the mouth widely, beneath the mucous membrane near the anterior pillar of the fauces on the right side, which proved to be the gustatory nerve, for on pinching it slightly with a pair of forceps, a disagreeable sensation of "pins and needles" was felt by the patient, referred to the tip and right side of the tongue.)

Before the removal of the plate from the mouth, models were taken, and the plate set, as near as could be, in the impression before casting. Another model was taken some time subsequent to the removal of the plate. These models I shall have much pleasure in presenting to the Society Museum; they show the position occupied by the plate fairly well, but do not show the loose mass of granulations about the frænum of the tongue and about the ends of the plate.

Cases were reported by Mr. Canton and Mr. Claude Rogers, in 1879 and 1880, of a somewhat similar kind, in both of which *springs* were worn.

Mr. Frederick Canton said, The somewhat similar case of mine to which Mr. Hern has referred is one in which I was sent for on account of the difficulty the patient had in swallowing. The appearance was that of two huge tongues. She had a lower plate with a gold bar, and the gold bar had cut through the frænum of the tongue, which had united over it. The bar had to be cut out of the mouth. The most marvellous fact in connection with this case was that the patient was able to stand the ulceration which had been going on; it had proceeded so gradually that she had not had much pain.

The Chairman: I think the Society is very much indebted to Mr. Hern for mentioning these cases; they are practical cases such as we may meet with in our daily practice.

Mr. C. Robbins: About two years ago a medical man brought a patient to me who had had a breast removed for cancer. She was afraid she had cancer in the mouth. I made an examination and found that the plate she was wearing was firmly embedded in the tissues of the mouth, the back of the case was coated very much with tartar, which covered the floor of the mouth. I learnt upon inquiry from her that the plate had not been removed from her mouth for nine years. She told me that her last dentist made the case such an excellent fit that it never required to be removed. It was with extreme difficulty that I could remove the plate ; when I had done so I found the mouth in a sad condition. I suggested a lotion of tannin and chlorate of potash.

Dr. Mitchell ; Mr. Chairman, I should like to ask Mr. Canton whether in his case there was any impairment of the sublingual glands.

Mr. F. Canton : No, sir, there was no impairment.

Dr. Geo. Cunningham : All the cases previously mentioned have been lower dentures, and usually with springs. I may mention the possibility of somewhat similar if less grave effects being produced by an upper denture without springs. A case came under my notice in which from a full upper denture causing irritation at the posterior edge of the gold plate, such a growth of mucous membrane and gum tissue took place that the flap of new growth gave the appearance of a double palate. The corrosive action of the secretion from the ulcerating surfaces was such for some distance that the original thickness of gold plate was greatly reduced, until it ended in a keen knife edge. The overgrowth probably originated from excessive pressure at the posterior margin of the plate, intensified by a movement backwards from absorption of the alveoli anteriorly after extraction. I regret I am unable to give the history of the case. as the patient did not adopt my advice, which was that the plate should be at once discontinued and the extensive flap of tissue removed.

Mr. James Stocken : A case of an embedded upper gold denture came under my notice. The patient had worn the case for seven years without having once removed it. It had evidently been inserted after the extraction of several molars and other teeth ; it was a large suction plate with springs. The subsequent absorption had left a considerable space between the gold plate and the gum ; moreover the edge of the plate had cut deeply into the sulcus, setting up a very considerable amount of irritation and ulceration. The result of this was a vast amount of gum growth. When called in to see the patient I found hypertrophy of the gum had taken place to such an extent that not only was the space between the plate and the gum filled up, but there was a complete pad of gum around the plate causing considerable protrusion of the upper teeth. Having removed the plate I treated the mouth with tannin and arsenic, from which the patient obtained relief. I at first thought that it would be necessary to cut away part of the gum.

Mr. Hockley : I think, Mr. Chairman, that there are few of us who cannot recount similar experiences in our practice, all of which illustrate the importance of instructing our patients to remove their plates frequently.

Mr. F. Canton : Where gold plates with springs have been worn I think the conditions to which we have been referring may in many instances be attributed to a want of fit in the plate resulting in a sawing motion by which it has gradually worked its way into, and become embedded in, the mucous membrane.

The Chairman : May I just point out that it would be interesting to know the result of the treatment : whether in the cases referred to the mouth has been restored to a completely healthy condition ?

Mr. James Stocker : In my case, sir, it did not resume its normal condition, but the mouth became much more comfortable.

Mr. Hern : With reference to the case that I have referred to, I will only say that the patient was very apprehensive that cancer would result, and I was not free from anxiety myself ; however, although the wound is still observable, the induration and large granulations have completely disappeared.

The Chairman : I will now call upon Mr. E. Lloyd Williams for his Casual Communication.

Mr. E. Lloyd Williams : The case which I wish to bring before the Society is only interesting as an instance of absorption of both hard and soft tissues in the mouth as the result of constant pressure, and in this respect it resembles to some extent the interesting case mentioned by Mr. Hern. The patient, a man fifty-one years of age, applied at the Dental Hospital in July last, in the following circumstances. He stated that about two years previously he had suffered some inconvenience from two upper molar teeth on the left side, which had become very loose and painful. He eventually got rid of the teeth by the aid of his fingers, but whether they had been pushed into the mouth, or whether any portion of either of them had been forced into the antrum, it was difficult to determine. The history of the case was necessarily a little clouded from the fact that the patient was totally blind as the result of a skating accident; it was, however, to be ascribed to alveolar abscess, where some amount of necrosis had taken place, involving the antrum. To obviate the discomfort of a passage between the mouth and the nose, the patient had plugged the opening with gutta-percha. The plugs had to be enlarged as time went on, and then the patient had decided, in his own words, "to bed the gutta-percha with something that would not *give* quite so readily," and for this purpose he had selected a piece of lettuce stalk. On examination, I found that a large opening, about an inch in diameter, communicated with the antral cavity, and the latter had been considerably enlarged, there being an extensive opening into the nose, and it extended above almost as far as the orbital plate. The cavity was lined with mucous membrane, and this was ulcerated in several places, but there were no portions of bone anywhere exposed. The model which I pass round, Mr. Chairman, gives a good view of the opening. I have also here the gutta-percha plug, and the piece of lettuce; the latter, however, has suffered somewhat from maceration. The treatment I adopted was to insert a plain vulcanite plate, which acted as an obturator. I would mention that my patient, to add to his other misfortunes, recently swallowed a brass screw, and has been in the wards of St. George's Hospital trying to get rid of it. He has, however, this afternoon been discharged, and will present himself for examination after the meeting.

The Chairman: I have much pleasure in announcing that Mr. Williams's patient is here, and will be pleased to be examined at the close of the meeting. Mr. Storer Bennett, I think, has a Casual Communication to make.

Mr. Storer Bennett: What I have to say, Mr. Chairman, is hardly worth being called "a Casual"; it is simply to present to the Society two skulls: one of a Cheetah, which I was fortunate enough to obtain from the Zoological Society. It is quite perfect, and is another example of carnivorous creatures. The other specimen is the skull of a young seal; it is interesting in so far as its dentition is complete; it has the normal number of teeth, but they are not all erupted, and we thus have the transition between the first and second dentitions shown.

The Chairman then called upon Mr. Hayman to read his communication.

Mr. C. A. Hayman contributed notes of a case of facial disfigurement, the supplying of an obturator and artificial cheek and eye.

About two months ago William Trotman, aged forty-six, called on me, having had the greater part of his face removed, in consequence of a large sarcoma of the superior maxilla.

1. *History.*—The history of the case is as follows. About two years since there was a slight protrusion of the right eye and that side of the nose, and the swelling increased for six months.

An operation was performed upon him by Mr. Board, at the Bristol Royal Infirmary, who removed the superior maxillary bone, leaving the floor of the orbit. As soon as the wound was healed, the tumour recurred, and after six months the patient was again operated on. Six weeks later a swelling formed below the right eye; and after two or three consultations, the surgeons decided that the right eye and floor of the orbit should be removed with the tumour; the patient would not submit, but left the infirmary. About six months afterwards he presented himself at the Middlesex Hospital; the tumour on the side of his face was then about the size of an orange, of a dark colour, and discharging blood and pus. There were no enlarged glands beneath the jaw, or in the neck. After a few days' rest Mr. Morris operated, making the necessary incisions, and dividing the bones with cutting forceps: the tumour, *with the eye*, came away *en masse*.

After the operation a large chasm remained, the roof of which was formed by the roof of the orbit, its inner wall by the septum of the nose; its outer wall by the outer wall of the orbit, pterygoid processes, and ascending ramus of the lower jaw. The floor was formed by the tongue and a portion of the soft palate, which was left intact. Posteriorly it communicated with the pharynx by a wide opening, in which, behind the posterior edge of the nasal septum, the trumpet-shaped orifice of the Eustachian tube of the sound side was fully exposed to view.

Contrary to the expectations of the surgeons, he made a good recovery, and an artificial appliance has been made which enables him to speak and eat with comfort; and at the same time giving him a presentable appearance.

2. *Model.*—When the man came to me, to see if I could

do anything for him, I found in the first place it was necessary to get a model of the mouth ; this was very difficult, as the lips were contracted after the operation, there being no facial muscles remaining to oppose those on the left side. But after modelling a tray in wax, and making it in vulcanite, a model was taken in A 1 composition ; and an ordinary upper plate made in the usual way.

3. *Making palate hold.*—This palate was very different from obturators used for congenital cases of cleft palates, and more difficult to hold in position, there being only one side of the natural palate on which to support the plate ; whereas in congenital cases the cavity is in the centre of the mouth, leaving two sides on which to rest the obturator. So a slight flange of vulcanite was extended to fit outside the face in front of the ramus of the lower jaw, and against the septum of the nose ; then a large wedge of vulcanite was added, to fit into the posterior nares ; this had the desired effect ; the palate was secure, and speech and mastication considerably improved.

4. *Model of the hollow face.*—Being satisfied with the position of the obturator, a model of the remaining hollow was taken in beeswax ; this was cast in plaster of Paris, moulded in sand, and casts and dies taken in metal.

5. A silver plate made in two sections was struck up, soldered together, and accurately fitted to the face, care being taken that it fitted under the right ala of the nose, and that a piece of silver came over the bridge of the nose on which to solder the spectacles.

6. The artificial cheek and eye were then modelled in wax to match the other side of the face ; this was then moulded in sand, and metal casts and dies taken.

7. A large piece of silver was struck between the metal casts (models) and fitted and *soldered* to the inner plate, like putting a cover to a box ; it was necessary to drill a vent-hole to prevent the whole arrangement from warping when cooling.

8. *Position.*—In order to keep the mask in position, a strong wire was extended from the cheek round the right ear, and a pair of spectacles soldered on to the nose piece ; an elastic band joined the ends of the ear pieces of the spectacles at the back of the head ; this answers very well.

9. *Painting.*—The eye and face were then painted and japanned. The case so far is satisfactory, the patient can eat

and speak, and I think you will allow that his facial delineaments are to some extent not unpleasingly restored.

Mr. C. A. Hayman, in reply to the various questions, said : The palate is solid, I am sorry to say, and of course it is heavier on that account, but it was necessary as it could only be made by a process of building up, small pieces of vulcanite being added to the original plate. The patient takes off one cheek at night, but leaves one plate in, as I am apprehensive that he would otherwise catch cold. I have instructed him to keep the plate very clean. The large opening at the back of the artificial cheek has to be kept full of cotton wool. If the apparatus hurts him at all he has to come to me at once.

In reply to Mr. Charters White, Mr. Hayman said the apparatus had been worn since last January.

Mr. Charters White : Mr. Chairman, May I have the pleasure of offering these photographs, which Mr. Hayman has given me, to the Society? They illustrate the case he has brought before us this evening, and he wished it to be noted that the *surgical* operations were performed by Messrs. Board and Morris.

The Chairman, having thanked Mr. White, called upon Dr. Mitchell.

Dr. Mitchell : The first case which I wish to present to your notice this evening is one of rather peculiar irritation in the inferior dental nerve. A gentleman came to me requiring a partial lower and an upper denture. I had great difficulty in taking an impression owing to an inordinate tendency to retching. I could not take one in plaster of Paris. When the sets were ultimately completed, and I put the lower plate into its place, the patient complained of acute pain, and there was inordinate coughing and retching, accompanied with cerebral congestion incidental thereto. Careful examination showed that the symptoms were produced by the plate—which was only of ordinary dimensions—impinging upon the inferior dental nerve, which was evidently very high up. I could trace it with a ball-pointed burnisher. I should mention that the patient had lost his molars and bicuspids by absorption of the subjacent tissues ; the prominence of the nerve was thereby greatly increased. Digital examination on either side, but particularly on the left side, produced all the symptoms that the plate produced. The way I dealt with the case was to shorten the plate and put in one molar instead of two. I found that probably his previous plate had been constructed in the same manner for the same reasons. This plan resulted in the cessation of all discomfort and unpleasant symptoms. I have also a case of restoration, which is a little interesting inasmuch as it is restoring the features on the *inside* of the mouth, while Mr. Hayman's was on the *outside*. I have marked on the model which I have here where the perforations occur. You will see that it is the restoration of the anterior portion of the superior maxilla by the adaptation of a continuous gum case, an equivalent to the portion of the maxilla anterior to the second bicuspid on the left side and first bicuspid on the right, being restored in porcelain and posterior to those points as with an ordinary case. The patient is quite unable to speak or drink without the case.

THE EXISTENCE OF TEETH WITHOUT ROOTS.

By Professor Rose.

In the *Deutsche Geitschrift fur Chirurgie* (xxiv. Band), Professor Dr. G. Rose gives an interesting account of several remarkable cases, occurring in his practice, of teeth which derived no nourishment from their roots, in fact which depended for their nutrition solely upon the periosteum and gum surrounding their neck, and which still survived and regained a sufficient degree of firmness to be used for mastication.

In one case the patient, a young man of 23, suffered from osteomyelitis of the lower jaw, resulting in necrosis of the edges of the maxilla. As soon as the dead bone became loosened, Rose made an incision along the lower edge of the jaw and removed the sequestrum, and he then found that the teeth, the alveoli of which he had removed, so that they were at first only held quite loosely by the soft parts, were still living, and that they became firm again and quite useful. In the case of six of the middle teeth, the fangs of which lay exposed for three years in an osseous case, this form of nutrition persisted for the whole of that period.

Another instance of this kind occurred in the case of a young girl, the subject of dropsy of the lower jaw. The roots of one of the molars had reached into the cavity. After long continued and patient investigations, Rose found out that the mother, two children out of thirteen, and one granddaughter, all suffered from cystic expansion of the lower jaw. Rose has met with many examples of cysts about the size of an egg in the lower jaw and he is of opinion that they all proceed from the liquifaction of the enamel organ, in the course of time this being the result of the retention of a tooth.

He remarks upon the great importance of the fact that teeth can live even when they are solely dependent for their vascular supply upon the soft parts, and he adds many weighty remarks upon the treatment of necrosis of the jaw, especially phosphorus necrosis, of which he saw a number of cases in Zurich. In those cases where teeth are still present it will be well when treating cases of inflammation of the jaw, followed by necrosis, to avoid making long incisions in the mucous membrane such as Rose was in the habit of recommending, and when it becomes necessary to remove the sequestra, it will be better to do this by means of an incision from below through the skin rather than through the gums.

He also gives the advice to operate in cases of phosphorus necrosis only when the bone is entirely loosened, and further to be careful not to injure the newly-formed osseous envelope, for otherwise the new jaw bone will not get proper support. A case of phosphorus necrosis on which Rose operated at Zurich and watched for a considerable time afterwards, and after whose death by a lucky accident the skull came into his hands, tends to confirm these propositions. On the whole of one side of the jaw where Rose had performed a subosteophytal resection a new jaw bone had formed, but on the other, where the osteophytes had been removed, the result was far from satisfactory.

PAINLESS LANCING of alveolar abscesses may be accomplished by the application of full strength carbolic acid and iodine, applied on a pledget of cotton. The crystalized acid, as it comes to us, should be liquified by the addition of a few drops of glycerine, say ten to fifteen drops to the ounce.

British Journal of Dental Science.

LONDON, MAY 1st, 1889.

ACTIONS FOR DAMAGES AGAINST DENTISTS.

The evidence in the action brought against Messrs. Cottam, an abstract of which we published in our last issue, points more than one moral, even if it does not adorn a tale. Messrs. Cottam will have the sympathy of the profession, for they were subjected to a baseless action, but fortunately gained the day. There are such actions going on day after day, and it behoves practitioners to be most circumspect in their dealings with patients, for in not a few cases a mere accident, or what the patient deems to be an injury done him or her is made the ground for action. Many dentists make it a rule, we confess when practical it certainly is a good one, never to extract except in the presence of another dentist. But few dentists can command such a state of things, and what are such to do? Certainly the first thing is to keep careful notes of any case in which anything out of the way occurs, or when the patient shows signs, as in Mr. Cottam's case, of uneasiness about his or her condition. There is a very generally wide spread fear that dangerous hæmorrhage may follow extraction, so that he will use a wide discretion who keeps his patient in his office until all the bleeding has stopped. It is undoubtedly true in the case of dental operations that "honesty is the best policy," for whenever a "smash" occurs or any other accident, unfortunate though it may be, it will redound far more to the dentist's credit, in the long run, to take his client into his confidence and tell him frankly that owing to unforeseen causes things have not gone as they should have done. If this course is not adopted sooner or later a day of retribution comes, and the patient believing his own sensations rather than his dentists' words appeals to some other practitioner, who is bound to reveal the true state of affairs, and thereby discredit dentist No. 1, who then has to bear not only the obloquy of having bungled his work, but also of having attempted to deceive his patient by telling a lie. The case of Messrs. Cottam is further valuable as showing how quite valueless is the evidence of the common run of medical men in such cases. We have again and again pointed out that as at present educated medical men know absolutely nothing about dentistry, and under such circumstances to accept the evidence of a medical men as to whether a dental operation has or has not been properly executed is as absurd as it would be to accept the opinion of a lawyer as to the sea worthiness of some of H. M. Ships of War. Doctors should be able to estimate the causes of hæmorrhage and the modes of checking it, but when we find them having resort to perchloride of iron as a styptic for the gums, and justifying their conduct by the contention that it, the solution of the perchloride, was only a weak one!—we begin to feel that this testimony should not be accepted until they can give proof that they know something about the matter of which they are speaking. Nor is it an imaginary case, for any one who will take the trouble to look up the files of old periodicals will find that many medical men have a rooted impression that it is a light and wholesome practice in dealing with bleeding to cauterise the whole of the buccal mucous membrane with solution of perchloride of iron. We make no personal reflection on the medical man in the case of Messrs. Cottam, we simply speak generally and affirm that the only evidence of any value in these cases is that of a dentist. And it would be a very wholesome rule if it were made customary that any such evidence should always be given by *ex parte* practitioners unknown personally to dentist and patient alike, and residing in some town other than that wherein the action had been lodged.

THE DENTAL REGISTER AND ITS ERRORS.—We have again and again urged upon our readers the great importance of their registering their names correctly, and giving early notification of their removal as well as duly stamping and posting the reply to the annual enquiry forms which the Registrar sends out. On the other hand, we think we have a right to demand a rigid accuracy on the part of the General Medical Council in the matter of printing the Register itself. There is, we submit, no excuse for such glaring errors as exist in the 1889 Register. For example, one gentleman carefully filled in his form, styling himself—accurately—L.D.S., England, and he is put upon the Register as L.D.S., Ireland! He registers his name in 1888 and is described as a licentiate of Dental Surgery, Ireland in 1877! Nor, we are informed, can such "clerical errors" be amended until the publication of the 1890 Register, and yet "after the publication of the name in the printed Dentist's Register, that Register alone is the legal evidence of Registration." Is then W. X. Y. an L.D.S. Ireland? for clearly the Irish college could not have granted a diploma to him at the tender age he probably was in 1877, and yet with the exception of the registration of a spurious qualification W. X. Y. is unregistered. It is a hard case, and one which in our opinion ought not to have occurred.

THE CONVERSAZIONE AT THE ROYAL COLLEGE OF SURGEONS.—We learn that this year for the first time, the English College of Surgeons are going to open their doors to all comers. F.R.C.S.'s., M.R.C.S.'s., and L.D.S.'s of England, can upon application to Mr. Trimmer, the secretary, obtain a ticket of admission either for themselves, or in addition a double ticket admitting also a lady. It will be advisable to make an early application, as naturally their space in Lincoln's Inn Fields is limited, and it is just possible that some limit to the number of invitations sent out may at the last moment be rendered necessary.

SHOCK IN RELATION TO DENTAL OPERATIONS.—This subject, which has received but little attention, though of considerable importance, was brought forward by Dr. Truman in an able paper at the Odontological Society of Pennsylvania at the November Meeting. Under this heading, according to the *Lancet*, he included not merely the collapse which may follow an operation or extreme emotion, but the lesser yet more prolonged depression of the mental powers and the circulatory system. To illustrate the importance of the matter he quotes a case occurring in Dr. Black's practice. A young lady at her own urgent request had three hours' continuous operation, some part of which was intensely painful. She was then dismissed for a couple of hours and returned promptly. After about another hour evidences of collapse appeared and the operations were suspended. On the route home she became worse, and remained in a "stupid condition" for four or five days, after which she passed into a nervous fever lasting for several months. This is doubtless an exceptional and extreme case; but all dentists know of cases, by no means infrequent, of persons exhibiting great weakness and depression after prolonged dental operations. The craze for enormous gold operations, taking five or six hours' continuous sitting, has, Dr. Trueman hopes, passed by, and he advocates that an operation should not last more than two hours, and that an interval of several days should elapse before another is undertaken, so as to minimise as much as possible the effects of the resulting nervous strain. Referring to the shock caused by extractions, he says the shortness of the operation may lead some to regard it as of little moment. A few favoured individuals will sit down and have tooth drawn with the greatest equanimity, but as a rule there is a great mental strain in advance, and great shock during the operation, and he condemns the practice of removing a large number of teeth at one sitting. Discussing the profession of dentistry as a calling, he considers it one of the most trying. Standing for hours, it is an unbroken effort of the mental and physical powers of the operator in almost constant conflict with similar disturbed relations of the patient;

meeting all sorts and conditions of men, women, and children—the women all nerves, the men all impatience, and the children all frightened,—it is not to be wondered at that many fall away from the ranks in comparatively early life. This is perhaps rather a gloomy view of the matter, but there is a great deal of truth in it. We have more than once insisted upon the effect of shock upon patients subjected inconsiderately to prolonged operative dental preceedings, and fully endorse Dr. Trueman's observations.

Abstracts of British & Foreign Journals.

THE DENTAL REVIEW.

THE EXCISION OF THE ENDS OF ROOTS OF TEETH AS A STEP IN TREATMENT OF CHRONIC ALVEOLAR ABSCESS.

The indications for this procedure are—A pulpless tooth with an abscess discharging, by means of a fistula, through the gum, is opened up—the contents of pulp chamber and canal are removed and disinfectants applied. The chosen medicament is pumped through the root and fistulous tract. The fistula does not close and the same treatment is repeated after an interval, but with no greater success. The root examination with a probe passed along the fistula is found to be rough and partially, if not completely, denuded of its periodontal membrane at the apex. These are indications for excision. The examination may show that a serumal deposit has formed round the apex, and unless it is removed the abscess cannot heal ; or that absorption of the root has taken place within a short distance of the apex, but not so far as to endanger the usefulness of the tooth should it be excised at that point. Another condition frequently found to be the cause of non-healing of abscesses is the incomplete growth of the root at the time the pulp was removed. The ends of the roots after treatment are found to be not fully filled. The ends of such roots should be excised. The method of excising is briefly as follows. The gum is incised over the root, the favourite incision being for the upper ⌣ and ⌢ for the lower. The gum is held out of the way by means of a tenaculum held by an assistant, and as soon as the bleeding has subsided the alveolus is drilled through to expose the root. The latter is excised with a long slender forceps or cut off with a safe-end fissure drill. Any inequalities of the end of the root are rounded off with fine finishing bur. All the instruments are dipped in a 1-1000 mercuric chloride solution, and the wound is washed of debris, etc., with the same solution. If the wound is extensive borated cotton may be packed into it for a day or two, until healing begins, as it does from the bottom of the cavity. If necessary a stitch or two may be made in the gum. Another class of cases where excision has proved serviceable is that in which the palatal fang of upper molars is found denuded almost if not wholly to the apex, with or without abscess. If the fang is excised, the tooth will be retained for a long time. The excision should be oblique.

PROSTHETIC DENTISTRY.

By Edgar D. Swan, D.D.S.

The writer deprecates men making artificial dental substitutes without seeing the person for whom they are intended. He thinks some of the American colleges are open to censure, for it is true that most of the graduates of the present look upon mechanical dentistry with disfavour when they seek employment in our offices; they expect to be employed as operative dentists, seeming to believe prosthetic dentistry beneath their capabilities. A mechanical dentist needs to be all that the name implies, that is one who looks for an approximate perfection in his art. He must possess what we may call a mechanical inventive faculty; he must possess the faculty of seeing his work in advance and invent means to overcome difficulties before they are reached; he should possess enough of those faculties which make the artist, to select a form and colour in teeth to harmonize with the features and complexion of the individual who is to wear them—a tooth may be elegant in shape and colour, yet if it lacks other qualities, and is unskilfully set in the arch, it becomes a failure. All realize that the first and one of the most important steps toward success is the securing of a good impression of the parts to be covered by the base plate. He believes the best material for this purpose, is "plaster of Paris;" because when applied to the parts and steadily held until hard it is not changed in removal, neither does it change afterward; if removed at the proper time and broken in so doing, the fracture will be clean and sharp, allowing a ready and correct readjustment of the several parts. In the art of impression taking, he offers a few suggestions upon general principles and difficult cases. First, assuming that a cup or tray be selected to approximate as nearly as possible to the jaw of which the impression is to be taken, and if one cannot be found suitable, it should he made so, with pliers, shears and files. They are not so expensive that we need hesitate to ruin one. For edentulous jaws the cusps in the market will generally answer the purpose. When an impression is to be made entirely of plaster, it is his custom to place three small pieces of softened wax inside the cup, one at its anterior and one on each side near the heels, then a narrow strip of base plate is carried across the posterior border; the cup so prepared is then pressed gently to the mouth; the wax gives three points of rest and the base plate rim prevents the escape of plaster into the throat and consequent nausea. When inserted the posterior portion of the cup should be placed in contact with that part of the mouth, and gradually carried up until the wax rests are felt. This allows the surplus plaster to escape anteriorly. If the mouth have a high arch, first take an impression with wax, then with a spatula cut away the posterior surplus nearly to the line where the plate is expected to rest, cut out the inside to a depth of about one-twelfth of an inch, leaving the three points of rest mentioned above. This gives an impression cup so nearly the shape of the jaw that very little plaster is necessary to secure the impression. This is also his custom for securing impressions for partial cases. In case the teeth are elongated, leaning, or undercuts abound, liable to draw and break the impression, he prepares them by building with modelling compound, or gutta-percha in such a manner as to invert the former shape, turn the point of the cone toward the end of the teeth, its base toward the jaw. The impression secured, these pieces are removed from the mouth and placed in their respective places within it. If the case be of the lower jaw, with a heavy undercut at its anterior lingual aspect, as sometimes happens, the undercut is filled with plaster, a spatula being used for this purpose ; when hard, remove and trim smoothly to any desired shape, replacing it in position when ready to take the impression. With regard to the difficulties encountered in impression taking, the writer gives one rule : Always secure an impression satisfactory to yourself before going further, and seldom if ever depend upon modelling compounds or wax ; they are unreliable. The next step is to secure a reverse or model from the impression. And he believes enough care is not usually taken to ensure a satisfactory result. He uses varnish to effect separation between the impressions and the model. Shellac varnish penetrates the plaster, colouring it, making it safer in case any portion of the impression has to be cut away. In mixing for the mould, the plaster should be placed into the water, never the reverse. This removes the air from it and prevents the liability to air-holes in the model, which are sometimes very vexatious, especially for rubber base. One essential is a smooth model, one that will leave the palatine surface of the plate as nearly polished as possible. He commends the method pursued by Dr. C. C. Evarts. "After getting the impression in plaster, give it a coat of shellac varnish, not too thin, and while it is drying, run a ring of sheet wax around it an inch or so deep. After the varnish is perfectly dry, instead of oiling, sprinkle powdered soapstone (or French chalk, so called) over the impression, then with a soft brush rub every part of it thoroughly, finally shaking out the surplus. Mix the plaster thin and pour, tapping the cup gently until the plaster commences to set." On the selection of and setting up or arranging a set of teeth, he offers a few general remarks.

1st. Do not select teeth too small, even though your patient does admire them. If they are even a little larger than required, the fault will be less than if reversed.

2nd. Do not select teeth too white ; better a little too dark than too white.

3rd. Use plain teeth in preference to gum blocks whenever possible, because of the greater latitude they give in arrangement.

With size and colour always consider the strength of the tooth when set. Select teeth with the bite as long as the case will admit without jeopardizing strength or beauty. He says "I consider the substituting of a single lost tooth, by any method of crowning, as belonging to mechanical dentistry, and I believe I am justified in saying that the dentist who extracts a fang which may be made to carry an artificial crown is guilty of malpractice." The writer eulogises Dr. Carroll's alloy for casting plates. It is alloy, one per cent. each of silver, copper and platinum to the one hundred of alluminum. It is thought this combination, while it makes the metal sufficiently fluid to flow in casting, will also remove other objections which existed. A few of the qualities which make this metal valuable for this use are—it is the lightest known metal, four times lighter than silver and eight times lighter than platinum. Gas fumes and sulphur do not tarnish it ; it is whiter than nickel or silver, and it is said to be stronger than steel. An alloy of ten pounds of aluminum to ninety of copper makes a bronze with a tensile strength of three times per square inch greater than Bessemer steel.

Literary Notices and Selections.

EXTRACT FROM PRESIDENT ABBOT'S ADDRESS AT ANNUAL MEETING AMERICAN DENTAL ASSOCIATION.

It is not a little gratifying to us that while the practical work of our specialty has reached such a high degree of perfection, the scientific or theoretical part has by no means been neglected. The efforts made in the last ten years to elucidate the minute structure of the teeth, their histology and pathology, have resulted in the obtaining of much practically useful knowledge. I will, I feel sure, be pardoned for calling your attention to this most interesting and instructive branch of our education, as it has occupied nearly all of my leisure time for the past ten years. The new views and actual knowledge obtained, based upon microscopical research, are so utterly at variance with those held previously, that I deem it not only justifiable, but advisable, to bring them before this erudite body, though only in a condensed form. One can, unquestionably, be a good practitioner without possessing more knowledge of the anatomy of the teeth than that they are built up of dentine, enamel, and cementum, representing the hard tissues, and pulp and pericementum the soft ; but I doubt if any practitioner can aim too high in his efforts to become acquainted with the intrinsic construction of the tissues of the organs he is so constantly operating upon. Does anyone doubt that the teeth are living organs, and as thoroughly nourished as any others of the body? We see them originating, and trace their development from the sixth week of embryonal life to the end, in both the temporary and permanent sets. We study, with the naked eye, their anomalies in number, colour, consistence, and shape. From personal experience we know that operations upon the teeth are extremely painful. Sensation is a property of living tissues only, and this alone will suffice to prove to an unbiassed mind that the tissues of a tooth—particularly the dentine—are endowed with properties of life. The question then naturally arises, Where is this life located?

It is plainly understood by every one that neither the lime-salts nor the matrix—the glue-yielding basis-substance—can be the seat of life. Consequently, in the old methods of preparing specimens—drying and grinding—no signs of life were discernable; nothing but a lifeless frame-work, as it were, of a tissue once full of life, was to be seen. Fortunately, those old and, as we now think, almost useless methods are fast dying out, and being replaced by more modern and rational ones, viz, those which aim at preserving intact all the organic portions of hard tissues of whatever nature.

The knowledge obtained by the older writers was through these old methods, and, unfortunately, the conclusions they arrived at are still indorsed by many, not in this country alone, but in England and Germany, countries considered the cradles of histology.

The proper manner for obtaining an insight into the intricate structure of dentine and cementum is to keep the specimens perfectly wet while they are being prepared. In order to do this, immediately upon the removal of teeth from the mouth they are placed in a solution of chromic acid, which dissolves out the lime-salts and preserves the matrix—basis substance—and its contents without material change. By this method, C. F. W. Bödecker succeeded in demonstrating, ten years ago, that the contents of the dentinal canaliculi, known as "Tomes's fibres," are formations of living matter. This he emphasized by the use of staining reagents, such as solutions of carmine, chloride of gold, osmic acid, etc., by means of which living matter in other tissues is rendered distinct from adjacent parts. The conical offshoots, emanating from the periphery of the dentinal fibres, were shown to penetrate light spaces in the basis-substance, which forms a net-like arrangement throughout the dentine ; thus demonstrating almost to a certainty that the whole basis-substance of the dentine is pervaded by living tissue. The certainty of these conclusions has finally been reached by new methods, adopted by William Carr, of New York, who, at his early convenience, proposes to lay the results of his studies before the profession. The dentine, therefore, proves to be analogous to other varieties of connective tissue, such as bone, cartilage, etc., in accordance with the views announced in 1873 by C. Heitzmann.

In this view, not only the so-called cells and their offshoots, such as the dentinal fibres, are the centres of life, but the whole basis-substance—hitherto considered inert, as it was a product of secretion of the cells—is proved to be endowed with properties of life, or, speaking more precisely, traversed by living matter. In Europe there is, up to the present day, but one authority in the line of microscopical research, namely, S. Stricker, of Vienna, who has fully adopted this view. It is, of course, in very pronounced opposition to the cell theory. Many botanists, however, both German and English, have of late conclusively proved that the so-called cells of plants are by no means individuals, but are all interconnected by offshoots traversing the basis-substance,—known in plants by the terms cellulose, cement-substance, etc.,—thus establishing an uninterrupted continuity of living matter from the most remote points of the roots to the very tip-ends of the leaves, the same as Heitzmann claims exists in animals.

The so-called bioplasson theory having been established as regards the structure of dentine, bore fruit almost immediately as regards the pathology of this tissue. It was shown in 1879 that in the process of caries of dentine—provided a living tooth be affected—a reaction takes place which we know as an inflammatory process in bone-tissue, and, although several microscopists have contradicted these assertions regarding the process of caries, attributing the destruction of teeth by this process to the invasion of micro-organisms and the chemical changes brought about by their presence, without any participation of the living dentinal tissue, I still hold to the same views as then announced, with no material modification, after having repeatedly reviewed the ground then gone over.

The formation of secondary dentine, which is partly a physiological and partly a pathological process, has been elucidated by Bödecker, who has also demonstrated the process of primary inflammation in dentine, called by him ebonitis. He demonstrated that in this process a reduction of perfected dentine into its embryonal condition takes place, and that from this, in turn, a new tissue, osteo-dentine, arises. This is of the greatest importance to the practitioner, since it is the outcome of every irritation caused by the carious process, and since it is stopped or brought to a stand-still by the sealing of cavities—by filling—from moisture, particles of food, micro-organisms, etc.

Another important portion of the tooth, certainly to the possessor, had been the occasion of more discussion as to its structure than even dentine, viz, enamel. For a number of years it has been a mooted question whether enamel is a mere deposition of lime salts, or a tissue supplied with life and nutrition. Bödecker demonstrated, in 1878, that there are interstices between the enamel prisms, and that these interstices hold extremely delicate fibrils of living matter, beaded in appearance, and sending offshoots into the prisms themselves, causing the transverse striations of the prisms, called after their discoverer the "striæ of Retzius." The square fields caused by these transverse striations were shown to hold a delicate, light reticulum, also supposed to contain tenants of living matter. At that time it was proved, on two of my own specimens, that, after a complete decalcification of the enamel, a distinct frill or reticulum is left, similar to that in any other variety of basis-substance, a portion of which was no doubt living matter. The great difficulty in studying the minute anatomy of the enamel lies in the fact that we cannot soften it to a degree sufficient to admit of its being cut. We must, therefore, resort to a process of grinding, which we do, taking the precaution to keep the tooth, from the time of its removal from the mouth until the mounting of the specimen produced, under water. If a thin slab of enamel be deprived of its lime-salts by means of a six per cent. solution of acetic acid, as proposed by Dr. G. W. Weld, a gradual dissolving of the prisms is observed, and the subsequent treatment with chloride of gold affords excellent means, to me, by which the presence of living matter in this tissue may be demonstrated.

I am, therefore, after ten years of careful study, thoroughly convinced that enamel is possessed of living tissue : the amount must of course, be very small. This conviction, I am sorry to say, is shared by but few microscopists as yet, but I am always hopeful, and believe the time is not far distant when it will be generally received as a settled fact.

The pathology of this tissue likewise furnishes strong proofs of its life. This I have demonstrated in the process of caries, where a partial reduction of the enamel into its embryonal condition takes place. I have further demonstrated that pigmentation (incomplete calcification) of this tissue shows a markedly distinct reticulum, and that stratification, anomalies in the course of the prisms, excess of club-shaped spaces, etc., are the result of faulty development, and, as such, prove the life of the enamel-tissue.

The third hard tissue, the minute structure of which has been elucidated within the past ten years, is cementum. Bödecker found it identical with bone-tissue in every respect: its lacunæ and canaliculi hold formations of protoplasm, partly living matter, and the whole portion known as inter-cellular or basis-structure contains living matter the same as other bone-tissue. In necrosis the shrinkage of protoplasm is a characteristic of the death of the tissue. In cementitis the cement-corpuscles, as well as the basis-substance, break up into medullary or inflammatory corpuscles, after a complete dissolution of the lime-salts; the final result being either an augmentation of the tissue resulting in a so-called hyperplasia, hyperostosis, or a disintegration into pus-corpuscles, with a more or less complete destruction of the cementum, such as we see in long-standing pyorrhea alveolaris and alveolar abscess.

Similar results, as to final destruction of the cementum, appear to be present in the absorption of the roots of temporary teeth, the granulation tissue appearing to grow into the cementum, taking the place of the lime-salts which have been removed by a physiological irritant. In connection with the development of the cementum, a large number of anomalies are known to occur, which I have attempted to bring into a system.

An important outcome of my studies is an overwhelming evidence that, no matter what the anomalous shapes, or to what extent this tissue may be augmented, it is still filled with living matter. This is, in our conviction, continuous, both in its physiological and pathological conditions, with that of the pericementum on the one hand, and that of the dentine on the other. Even though the pulp be destroyed, a certain amount of vitality is left in the cementum, nourishment being furnished it through the pericementum. This accounts for the fact that a pulpless tooth may be retained and be useful almost indefinitely, provided it has no opponent.

One of the most fascinating and I may say puzzling studies in our department is the histology of the development of teeth, which has heen most carefully studied by Heitzmann and Bodecker for the past eight years. Excellent workers have made attempts to clear up this topic for many years past without reaching a solution of the puzzle. Huxley, as early as 1859, announced the impossibility of settling this question on the ground of the cell theory. The greatest difficulty has always been to explain the origin of the enamel-organ from a previous epithelial structure, such as, unquestionably, the first trace of the organ is. The second stumbling-block has always been the question, " How are the odontoblasts on the periphery of the papilla transformed into dentine proper ? " The researches before alluded to have given evidence of the fact that the epithelial tissue of the cord is transformed into the myxomatous of the enamel-organ, which, as such, has ceased to be epithelial in nature, and is stored-up material for the formation of the future enamel. It was shown that this myxomatous tissue is the matrix of ameloblasts, which themselves are not directly converted into enamel-rods, but break up into rows of medullary corpuscles, which, after being infiltrated with lime-salts, build up the substance of the enamel itself.

In the development of dentine the same transformation takes place, first from medullary elements of the papilla into odontoblasts, and from these back again into medullary tissue, which, as such, receives the lime-salts and thus becomes dentine. The dentine-fibres are visible between the medullary corpuscles, which are receiving, or to receive the lime-salts, although originally attached to and connected with the odontoblasts. Both ameloblasts and odontoblasts, according to this view, are merely provisional formations.

Both the enamel and dentine are the direct product of embryonal elements, the same as are all other varieties of tissues of the animal organism.

Whereas the *cell* theory considered the cells as stable and unchangeable formations, the *bioplasm* theory suggests a continuous oscillation of the form elements, or continuous ups and downs in their appearance, until a certain tissue is perfected. This same process of oscillation takes place in all pathological conditions, for the benefit of newly-formed tissues, the so-called hyperplasias, tumors, hyperostoses or entirely new tissues, such as vaso-dentine and osteo-dentine. Researches comparatively so novel and of such an extremely delicate nature, requiring so much patience, so much technique, and such an experienced eye, are, as you can readily understand, not easily brought to the clear comprehension of every tyro in medicine or any of its specialties. We are, however, greatly pleased to see such a growing tendency, particularly among young men in this country, to do original work in this line of science. There are already in many of our dental schools chairs devoted to the department of microscopical anatomy of the teeth. In the last ten years a number of earnest workers in this country have published the results of their researches, and, although they do not fully agree with our views, they still are deserving of great credit for the hard work they have done for our general information. Among them I will mention Andrews, Black, Sudduth, Williams and Stowell.

With the antique cell theory no accurate understanding of the minute anatomy of any tissue of the body was to me possible. Beyond the proof of the presence of cells and their derivations, no efforts had been made to localize the life and the physiology of the tissues. Now we know that properties of life are present, not only in the so-called cells, but in the inter-cellular substance, hitherto supposed to be entirely inert.

Let us hope that the time is not far distant when the results of the researches made in this country will meet with the approval of at least a majority of microscopists all the world over. What we are striving for is originality and independence of old countries. To the superiority of our specialty in its practical aspect we hope will sooner or later be added superiority in the scientific departments.

Taking Plaster Impressions.—While forcing cup into position, let patient change from upright posture to one bending forward at an angle of forty-five degrees, allowing head to drop on the chest. The annoyance of "choking" will thus be avoided.

Reports of Societies.

THE MANCHESTER ODONTOLOCAL SOCIETY.

The usual Monthly Meeting was held at the Grand Hotel on Tuesday, April 2nd ; Mr. Leopold Dreschfeld, L.D.S., in the chair.

Casual Communications.

Mr. G. N. Skipp exhibited two cases of tracheotomy instruments and tubes, supplied by Messrs. C. Ash & Sons and Messrs. Weiss & Co., Mr. Skipp explained that his reason for bringing them before the society was that since the last meeting he had a case of spasm of the glottis, which so impressed him with the necessity of having these instruments at hand that he got them without delay. He had administered the gas to a patient with a good heart and chest ; but while the extraction was proceeding the patient suddenly began to make a violent effort to breathe. He at once seized the tongue, and, with some effort, succeeded in pulling it forward, which enabled the patient to take one or two gasps of air ; but, unfortunately, the tongue flew back again and the spasm was worse than before. However, his co-operator was able to insert his fingers into the patient's mouth ; and, with the additional aid of the forceps, between them they succeeded in dragging the tongue forward again and thereby relieving the spasm. Mr. Slipp believed that if he had been administering the gas alone the patient would have died. It seemed to him that this case was a warning ; and he thought it of great importance to possess the instruments he had shown so as to be ready for such an emergency as he had described.

Mr. Dunkerley : Was there any coughing, or any other indication given to lead you to suspect that anything was wrong ?

Mr. Skipp : There was not. I saw the patient struggling to breathe ; and his chest, which did not move in the slightest, was completely emptied of air. I gave the gas twice before and twice afterwards, and the patient took it splendidly.

Mr. Wood (Bolton) : Was there much hæmorrhage ? And in what position was the patient's head ?

Mr. Skipp : It was an upper tooth, and his head was in the position incidental to extracting it. Let me strongly caution any one under similar circumstances not to let go of the tongue, for it flies back so far, and is so contracted by the force of the spasm, as to render it almost impossible to pull it to the front again, even with the forceps. The anæsthesia lasted the first time about thirty seconds, and the second time about a minute.

Mr. C. O. Whittaker then read his paper on Gold Fillings. [See page 372.]

Mr. Plank said it was a most important subject, and it would be quite impossible for any dentist in the future to maintain his position unless he gave his mind to filling cavities with gold. He used the "Perry" separator almost exclusively, and had quite given up the old methods of separating the teeth, for he found that pressure long applied produced more inflammation than if applied quickly.

Dr. Shaw said he had yet a great deal to learn in spite of his forty years' experience, and he had heard for the first time this evening never to put a groove into the cervical edge of a cavity. By this method of preparing cavities he did not require to separate the teeth so much as is usually done ; but when he had used the "Perry" separator he had found it somewhat clumsy. Mr. Whittaker had referred to the tendency to "ball up," as the Americans say, which caused it to fall away from the edges of the cavity. This arises from the fact that the first layer is not firmly secured in place. One remedy is to commence filling cavities on the approximal surfaces of the back teeth with good sized pieces of tin foil, for it is softer and more easily packed and can thus be made more secure. Besides, he has found the tin at the cervical edge of the cavity to be a better guard against decay. Another help will be found in an instrument called "Ambler's assistant," which is simply a strong wire about three to four inches in length with a ring at the end for the insertion of the finger. By its use the gold already in the cavity can be held in its place while fresh pieces are being packed. Mr. Whittaker had referred to the use of fossiline ; and it seemed to him (Dr. Shaw) that in many cases where the pulp in which there had been absolutely no inflammation, (for after that the hope of saving it was very small indeed) would be exposed by exhaustive excavation, it could be protected by means of a very thin sheet of cork, such as may be got at any depot, saturated in pure wood creasote, and then covered over with fossiline. In regard to Mr. Whittaker's unreserved opinion that tin was absolutely the best filling material, he quite endorsed it ; and referred to many cases which had created this opinion. At the time he commenced practice in Manchester tin was but little known, but he had always used it a good deal, and was now using it where he had been induced to try amalgams, it did not last longer, and without its discolouration of the tooth. He was sorry that the question of who first used the combination of tin and gold had been introduced into such a paper, but as it was there he must make some reply Whenever anything new comes up there are lots of people who have seen something so like it somewhere or at sometime that they easily persuade themselves it must be the same old thing. So it was with this combination of tin and gold. Now, tin and gold has been combined in cavities from a time before any of these gentlemen named were born. But how combined ? By filling the cavity partially with tin and then covering it over with gold, as was a common practice with the late Mr. Gidney, of Manchester. It is true that the tin sometimes got exposed, but that was unintentional. It was seeing this practice when a young man that led him (Dr. Shaw) to use tin at the cervical edges, as before named, and which has now become a not uncommon practice. Do not let any one imagine that he (Dr. Shaw) was putting in a claim to the credit of having originated this practice, for he did not care a fig who originated a thing so long as it was good. Now, Mr. Gidney and his predecessors had made tin and gold fillings in a certain way ; and he and others had made tin and gold fillings in another way, for a long time. But the practice that he yet thinks, with all deference, was introduced by Mr. Lomax was the immediate and complete combination of tin and gold throughout the entire cavity. And certainly it was Mr. Lomax's persistent use of this combination while the rest of us in Manchester and elsewhere generally, if not altogether, avoided it that has made it a success in dental practice. That much is due to him, at any rate.

Mr. Peter Headringe thought all cavities should be made as round as possible. If they made square or obtuse angles they had always the difficulty in working the material, either tin or gold, into the cavity. He also urged that it was a matter of vital importance that the mouth generally should be in a sound and healthy condition before such operations as fillings were commenced.

Mr. Skipp said that as he and Mr. Whittaker had been taught by the same man he could not discuss his paper to any disadvantage. He could not, however, go so far as to say that no grooves should be made in the cervical edge of a tooth, because they often found this edge was the strongest. One of the most important points was to be able to diagnose whether gold or some other material was the best filling to use. As to the "Perry" separator, he was heartily sick of it. He did not believe in a matrix for gold fillings because, as Mr. Whittaker had said, they must be careful not to carry the gold over the edge. He should have liked to have heard from Mr. Whittaker what size he made his retaining points? He might say that when he was at the Dental Hospital in London those used were only the size of a needle point, but in a year or so after they were used larger. Dr. Shaw had mentioned the use of cork with fossiline, but he (Mr. Skipp) strongly disapproved of the use of cork or any other substance capable of absorbing moisture; as the only teeth, in his experience, which had not given satisfaction were those in which substances capable of absorption had been introduced.

Mr. Dunkerley said that when he came across a tooth so far gone that to cut away every particle of the decay would expose the pulp he preferred to leave some of the disorganized dentine behind and place over it what if called a "Western" cap, which was a metal cone of platina that did away with the pressure on the pulp and diseased dentine. If the pulp had become so irritated that it could not be saved, he extirpated it: and if it happened to be only a two walled cavity he made an anchorage in one of the roots and inserted a strong pin which he fastened in with amalgam or fossiline, and around which he packed the filling. By this means the filling became much more secure in every respect. He preferred tin in filling weak teeth, as it was more malleable and easier to work.

Mr. W. Headridge said that Dr. Shaw was perfectly right with respect to the use of cork where, by taking away every particle of the diseased dentine, the pulp would be exposed. In such a case the cork would prevent any undue pressure upon the pulp, and thereby protect it against the filling; while the direct pressure of the fossiline upon the pulp would be likely to destroy it. In preparing a cavity for filling he did not sacrifice more of the sound dentine than he could possibly help, and he believed in the edges being left thick and solid so they would not chip off. He was a strong advocate of tin fillings; and looked upon that material, when well put in and well pressed home, to be better than a great part of the gold fillings inserted. He had been induced to use it in cases where gold could not be afforded, and had always been pleased with the result.

Mr. Whittaker then replied to some of the questions that had been raised. In regard to the "Perry" separator, he used it in a majority of cases, especially where the teeth overlapped. He did not think it was always possible to perceive the "balling up" that had been alluded to. He had found a difficulty in filling cavities without using retaining points; but he did not care to use them in gold fillings. He liked the cavities squared at the bottom when filling with gold, as it gave the metal a good hold.

The President then proposed the usual vote of thanks to Mr. Whittaker for his paper.

Dental News.

THE next meeting of the Odontological Society of Great Britain will be held at 40, Leicester Square, W.C., on Monday, May 5th, at 8 p.m.

Business: Paper by W. A. Kirby, on "Electrical Progress and Dental Practice."

Paper by Mr. David Hepburn, "A Few Remarks on Suction Plates, Air Chambers, and Artificial Rugæ.

E. G. BETTS, *Hon. Sec.*

ROYAL COLLEGE OF SURGEONS OF IRELAND, DENTAL EXAMINATION.

THE following gentlemen have been admitted Licentiates in Dental Surgery of the College, viz.: John Charters Birch, Leeds; Victor Massey Crosse, Augers, France; Henry Williams Messenger, London; John George Wallis, Hull; and Walter Williams, Eastbourne.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

During the April sittings of the examiners, the following gentlemen passed the First Professional Examination for the License in Dental Surgery: John Thomas Jameson, Newcastle-on-Tyne; John Cromar, Aberdeen; Alexander Wilson, Glasgow, and George William Stringfield, Sussex; and the following gentlemen passed the final examination, and were admitted L.D.S., Edinburgh; Albert Maurice, London; Arthur Percy Stocken, Ealing, Middlesex; Alfred Edward Donagen, Cambridge; George William Stringfield, Sussex; John Pryse Roberts, Kirkdale; Henry Mallet, Devonshire; Frederick Page, Edinburgh; John Crostwhaite M'Namara, Cumberland; Henry Hepburn Chapman, Edinburgh; John Thomas Craig, Warwickshire; and Thomas Jackson, junr., Preston.

APPOINTMENTS.

Mr. W. A. Hooton, L.D.S. Eng., has been appointed Lecturer in Owen's College Manchester, on Dental Anatomy and Physiology.

ERRATUM.

Page 355 "Review" the address of Blakiston Son & Co. should be 1012 Walnut Street, not 10 & 12 Walnut Street.

ANSWER TO CORRESPONDENT.

Stigna.—The title "Dental Surgeon" or "Surgeon Dentist" is invariably used by *registered* Practitoiners.

British Journal of Dental Science.

No. 512. LONDON, MAY 15th, 1889. Vol. XXXII.

A SURGEON'S NOTES ON CERTAIN DISEASES AND MALFORMATIONS OF THE TEETH. *

By Jonathan Hutchinson, F.R.S., LL.D.,
Consulting Surgeon to the London Hospital.

My first acquaintance with the disease which is, I believe, known in the dental profession as "Riggs' disease," but for which I would propose the name *Sycosis dentium*, began with the observation of patients who had lost all their teeth before arriving at middle life, and in whom the usual history of dental caries, &c., with pain, are absent. The subjects of this condition had of course come under my observation quite accidently in connection with other surgical maladies. But my interest was unavoidably excited by the fact that it was possible for a man, whilst apparently in good health, to lose all his teeth without obvious cause. At length it happened that a patient came to me in whom the condition was in progress. A good many of his teeth had already fallen, and others were becoming loose; there were no caries and no toothache, nor was there much of the general inflammation of the mouth which attends mercurial salivation. The gums were, however, somewhat inflamed, but the inflammation was chiefly limited to the immediate neighbourhood of the tooth fangs. Around several of these, by a little pressure, pus might be made to exude. The disease was clearly, in the main, a suppurative inflammation of the tooth socket. Its similarity to the disease of the hair follicles which we know under the names of Sycosis and Tinea tarsi at once struck me. At this time I had never heard of Mr. Riggs' observations, nor was it until some time afterwards that I became aware that the condition had been observed by him and had received his name. My information upon this point came through a patient. A fellow-countryman of Mr. Riggs, an American, consulted me for some ailment, I forget now what, and I had occasion to examine his mouth. He observed the interest which I took in the loss of teeth from which he was suffering, and observed that he was the subject of "Riggs' disease." I took his diagnosis and at once made inquiries amongst my dental friends, and collected what information I could respecting it. To you, Mr. President, I was specially indebted for detailed information, and you told me when I mentioned my sycosis comparison that you had yourself compared the disease to baldness. The information which I have collected amounts in the main to this: that all dental observers agree as to the fact that there is a liability in some persons to have the teeth fall out one after another without any material aching or pain, and with suppuration about the tooth socket. Further, I think it is agreed that no cause has as yet been assigned for this ailment, that it is not connected with syphilis, or with any special form of debility, but may occur to healthy adults and is, perhaps, especially frequent in men. The disease does not commence by an attack of general stomatitis, but begins by discharge around the roots of one or two teeth, and then gradually spreads to others. It is very intractable under treatment, as indeed might be expected from our ignorance as to its cause. It is of slow progress, but may in persistent cases, and after many years, leave the patient quite edentulous.

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*A Paper read before the Odontological Society of Great Britain.

Let us now contrast these facts with those which we know concerning ophthalmia tarsi. I take ophthalmia tarsi in preference to sycosis of the beard, or whisker, because there are different forms of the latter which pass under the same name. Some of these are cryptogamic. Permit me, however, to express a definite opinion that the common forms of sycosis of the beard, &c., are exactly the same as ophthalmia tarsi, and that both are inflammatory and not cryptogamic in their origin. Ophthalmia tarsi is a suppurative inflammation of the follicles of the eyelashes, which produces a contagious secretion, capable of infecting other follicles, and thus causing the disease to spread. It occurs in young, and rather delicate persons by preference, but may be sometimes seen in adults. Its connection with debility, or rather with want of tone, is, I think, very definite, but at the same time it must be admitted that it is often seen in those who are not debilitated in any special degree, and who consider themselves in excellent health. Sometimes the disease spreads to the eyebrows. If the patient be an adult male it frequently affects the whiskers, moustache, and beard ; in rare instances it may attack the scalp, and yet more rarely it may affect the pubes and axillæ. I have known a patient rendered almost entirely bald by a pustular inflammation of the scalp affecting the hair follicles, and in almost all respects similar to ophthalmia tarsi, the latter malady being also present at the same time.

There is yet another malady which I think we must associate with the inflammatory and non-parasitic form of sycosis ; it is one to which I ventured many years ago to give the name of sycosis of the nails (*sycosis unguium*). In this disease, which is rare, all the nails of both hands and feet are liable to suffer from suppurative inflammation at their roots. The nail becomes loosened, and may fall. The disease, so far as I have seen it, occurs only in cachectic and under-fed children. It is clearly contagious, beginning on one digit and then spreading to others.

The methods of treatment which succeed in the cure of inflammatory sycosis, whether of the eyelids, scalp, face, or nails, is strongly in confirmation of the theory of contagion, and at the same time of the belief that there exists a constitutional debility, which is to some extent a predisposing cause. That the share taken by the constitutional predisposition is small, is proved by the fact that when once cured, as it may easily be by proper treatment, the disease does not as a rule show any tendency to return. I have seen this over and over again in very bad forms of ophthalmia tarsi (*sycosis tarsi*), and in some in which the whiskers and beard were affected. In the latter, however, the process of cure is so very different that we have much fewer opportunities of testing its permanency. The method of cure consists in acting vigorously up to the theory of its being a contagious inflammation. One or other of the remedies which repress cell growth when overactive must be employed ; and of these by far the best in mercury. Great care must be taken to allow this agent to come in contact with the cell structures which are involved. To this end all crusts must be removed, and the eyelashes pulled out. If necessary, the epilation must be carefully repeated, and in its intervals a weak mercurial ointment must be used. At the same time tonics must be employed. Under these measures it is very seldom that a complete cure cannot be obtained. If it is not, it is certainly due to the fact that the patient is out of health, and cannot adopt the measures for recuperation.

I shall have to point out directly how these facts may be applied to the treatment of sycosis of the teeth. Before doing so I may, however, mention a very remarkable instance which impressed me with the necessity for constitutional treatment. A gentleman of middle age, who simultaneously with one of his children suffered severely from sycosis tarsi, had for a considerable time resisted the influence of local treatment. He objected to epilation, but he had used the ointments perseveringly, and he did not get much better. He was not definitely out of health, but he was living in a town, and somewhat run down by work. I advised him to try champagne in addition to his tonics, knowing that this wine has in many cases a really marvellous influence over cell nutrition. He did so, continuing meanwhile the use of the ointment, and in a few weeks his eyelids were perfectly well. It is now six or eight years since the cure and he has never had any relapse. As regards the permanently toothless condition which results in the worst cases of Riggs' disease, we find its parallel in certain forms of lippitudo, with entire destruction of the eyelashes as a consequence of sycosis tarsi. The fact, however, that hairs may grow again after exfoliation from disease, or after mechanical removal for purposes of treatment, and that this may occur over and over again, will explain the fact that their permanent and entire loss is a less frequent result of the disease than in the case of the teeth. It will also explain the far higher degree of intractibility of treatment under treatment of Riggs' disease, for we cannot pull out the teeth in order to gain access to the disease underneath, as we do so freely in cases of sycosis of the hairs and nails. Although the comparison between hairs, nails, and teeth as to their development is in many respects very close, it differs in this, that there are no structures capable of reproducing teeth.

The next subject on which I propose to say a few words is one on which I must speak with great caution before the members of the Odontological Society. It is as to the occasional injurious influence upon the tongue and mouth generally of materials used for stopping the teeth. I have long entertained an opinion that some of the amalgams do occasionally cause sores on the tongue and mucous membrane of the lips, and I have expressed that opinion some years ago in public. I have little more to do on the present occasion than to state that the experience of recent years has strengthened those impressions. I still very frequently see cases in which irritable sores on the tongue occur under conditions which oblige me to believe that the stopping used for the teeth is their cause. This never occurs in connection with stopping with gold or with gutta-percha, but the material is always some black compound. So strongly have I been impressed with this fact that I always warn patients who are liable to sore tongue not to allow any black amalgam to be put into their teeth, and very frequently in intractible cases of sore mouth advise them to have all teeth which are so stopped to be either refilled with some other material or extracted. My statements on this point must be regarded simply as those of an observer. I am not prepared to enter into any detailed discussion on the chemical points involved, nor am I indeed acquainted in detail with the differences in the composition of the materials employed by the dental profession. Some of these are, I believe, secret preparations so far as the exact proportions used by manufacturers are concerned; and it may be that there are important differences amongst them as regards the possibility of their undergoing some sort of solution in the mouth. My dental friends assure me that these amalgams are practically indestructible, and that nothing is more uncommon than for these plugs to exhibit any evidence of erosion or solution. Some of them admit, however, that inferior amalgams may possibly be dissolved. In particular I am told that there is a copper amalgam which stains the adjacent surface of the tooth, and which, therefore, to some extent presumably undergoes solution. However this may be, the fact remains that it is in my experience very usual to find a black stopped tooth opposite to an intractible sore on the tongue or lip, and to see the sore get well after the removal of the stopping or the tooth. Nor have the cases which have come under my observation been in patients who have been treated by incompetent practitioners, or with cheap materials.

One of the first cases which drew my attention to this subject still remains one of the most definite and instructive. It was that of a physician from the United States, who had a number of very intractable ulcers inside his lips and on the sides of his tongue. Everybody whom he consulted assured him they were syphilitic, but said he, "I am quite certain that I never had syphilis." He was married and had healthy children, and he did not smoke. His teeth had suffered much from caries, and a great number of them were stopped with amalgam. The stopping had been done in America, and apparently well done. After much unsuccessful treatment by other means, I advised him to get rid of all the stopping. He did so, and his mouth got well.

I do not intend to trouble the Society with any detailed remarks on the subject of *Syphilitic Teeth.* I have in fact nothing that is really new to say about it. It may, however, be not without its use to just briefly refer to the present state of opinion respecting them. I believe it may now be said that in all parts of the world the value of notched upper incisors is fully recognized as an indication of the previous occurrence of an attack of inherited syphilis in infancy.

I think it may be added that as time has gone on we have learned to concentrate our attention on these upper central incisors of the permanent set as being indeed "the test teeth." For myself I may say that year by year I find that I pay less and less attention to the peculiarities presented by the other teeth. Those peculiarities are often much more conspicuous than are the notches that are in the test teeth, but they are far less trustworthy. They are in fact misleading, and in a majority of cases are caused rather by the remedy which was given for the syphilis than by the syphilis itself. Respecting the test teeth, an experience of now upwards of thirty years enables me to speak with the greatest confidence. I do not recollect a single instance in which their malfornation, if well characterized, has misled me. When they were present, their evidence may, I believe, be trusted to the full. It may be well, however, here to say a few words respecting the numerous cases in which, in spite of the existence of inherited taint, the characteristic teeth are not present. I use the word characteristic advisedly, and in its strongest sense ; for I suspect that there are not a great many cases in which these teeth present no peculiarity whatever. There are many in which their malformations are only slight, and such as cannot in any way be trusted as symptoms. The best opportunities which we get for observing the range within which syphilitic malformations of the teeth may vary, occur in cases in which several members of the same family have suffered from inherited taint. In such cases I have not infrequently known one or two of the children to present the characteristic teeth, whilst another in whom it was certain that the taint still existed showed little or no peculiarity. I may here note that the experience of recent years has confirmed, without however in any way explaining it, two little items of clinical observation which I made long ago. The first of these is that those subjects of inherited taint who present us with good examples of interstitial keratitis have almost invariably malformed teeth, and those who have malformed teeth scarcely ever escape interstitial keratitis. The other point is that those who are liable to suffer in after life from phagadænic affections of the mouth or throat very often—indeed, perhaps, usually—show nothing peculiar in their teeth. Several remarkable illustrations of this latter statement have been quite recently under my observation.

(*To be concluded.*)

ANTISEPTICISM IN DENTAL SURGERY.*

By Robert Hall Woodhouse, M.R.C.S., L.S.A., L.D.S.

Gentlemen,

I have been requested by our President to introduce for discussion this evening the subject of antiseptics. When I thought over this subject, I soon began to realise that, great as has been the research already made in the science of antiseptics and bacteriology, we can at present consider ourselves as treading but the fringework of a new science, which promises in turn to complete as great a revolution in medical science and treatment as that which followed the great discovery of the renowned William Harvey, now more than two-and-a-half centuries ago. My endeavour, however, must be to briefly allude to these discoveries, and consider them only in the light of their application to the routine of our daily practice as dental surgeons.

To the science of bacteriology, and those who have worked in it so assiduously, our profession owes an immense debt of gratitude, as it has let in a flood of light on the *rationale* of our treatment. It enables us to persue with greater precision and definite aim our treatment in many operations that formerly baffled the dental surgeon ; notably those connected with exposed pulps and septic root canals, with regard to both of which conditions I wish more especially to speak this evening.

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* A paper read before the Odontological Society of Great Britain.

Co-existent with special localised treatment of the teeth, too great stress cannot, of course, be laid on the general treatment of the oral cavity. The environment of the teeth is all-important ; the most skilful operations may, and often do, fail, from neglecting some simple general treatment which tends to counteract a condition of sepsis in and around the sockets of the teeth. The patient needs to be educated to co-operate with the dentist to get the best results in this respect. As stated by Professor Miller, of Berlin, "before all antiseptic or alkaline washes come the tooth-brush, tooth-pick and floss silk."

It is not, however, specially with these auxiliary antiseptics, as they may be termed, and important though they may be, that I have now to deal, but with germicides proper. A true antiseptic has been defined as that which prevents putrefaction by virtue of its action in arresting the growth of organisms, or destroying these, or the chemical activity of certain substances which give rise to fermentation or decomposition. The patent fang of a tooth, with its surroundings of high temperature, food, and water supply, forms an excellent incubator of bacteria, and when neglected is very much like a minute tropical swamp. When the right treatment, however, is adopted, the bacteria are taken at a disadvantage and a condition can soon be produced which renders further multiplication impossible, by removal of the pabulum from which they are nurtured. How far the micro-organisms extend up the dentinal tubuli, *beyond* the limit of decalcified bone, I am not prepared to say ; my impression is that they do not so extend, or, at all events, if they do extend to some slight extent, such powerful drugs as the perchloride or iodide of mercury are well calculated to overtake them and stay their destructive progress.

In the introduction to the new edition of his *Materia Medica*, Dr. Mitchell Bruce says, in speaking of drugs generally, that the number used from time immemorial is enormous, and comparatively few are now believed to be really useful. As dentists we may, I think, with advantage note his statement. To simply enumerate all the drugs that have been recommended for their antiseptic action alone in connection with the teeth, and poured in and around them in various proportions and combinations, would be a task more tedious than profitable. We must dwell more especially on the principles which underlie their general action, and the conditions which need their application. In a recent copy of one of our dental periodicals I noticed a very comprehensive germicide prescription, and recommended for fang-filling. It contained the following :—B naphthol, iodol, carbolic acid, menthol, eugenol, ozonic ether, and chloroform. Such a combination as this might well strike terror into the most hardy of micrococci. It reminded me of a sketch I once saw of an old gentleman who, after an unsuccessful day's angling in disgust threw into the river his book of flies, with the remark, "There—take your choice!"

In dental operations it is of great importance, not only to use every artifice to destroy micro-organisms, but also to produce a condition of the mouth which allows no quiet resting-places for this nomadic and prolific race. Whether contour fillings or free divisions be adopted, this should equally be borne in mind.

Professor Miller, of Berlin, in a list of germicides, places the relative powers of well-known agents in preventing the development of fungi, or producing an acid reaction in sweetened saliva, in the following order :—

Perchloride of mercury	1 in 100,000
Peroxide of hydrogen	1 in 50,000
Iodoform	1 in 6,000
Salicylic acid	1 in 2,000
Eucalyptus oil	1 in 1,600
Carbolic acid	1 in 1,500
Oxide of zinc	1 in 1,250
Permanganate of potash	1 in 1,000
Listerine	1 in 120

The active ingredients of listerine are benzoic acid, borax acid, and thymol.

To this list I may add boric acid, a solution of 1 in 800 of which will, it is stated, prevent the development of anthrax bacilli. I have found this preparation in the form of boroglyceride most useful in disease of the antrum, or as a mouthwash after the extraction of teeth.

The red iodide of mercury, which is soluble in an excess of iodide of potassium, is stated to be at least twice as powerful an antiseptic as the perchloride of mercury. I have used it

1 in 500, and also 1 in 100 in solution. Cases of dead teeth have gone on well, but I have not employed the preparations of mercury for a sufficient length of time to speak very definitely of my own experience, and shall be especially glad therefore to hear that of others. The iodide of mercury is the form in which the drug is now being used internally as a germicide in zymotic fevers, and success has been claimed for it in many instances. In speaking of antiseptics generally, I ought perhaps to allude to probably the most popular of all, viz., tobacco. Its effect on the teeth—in moderation, of course—I believe to be beneficial. Possibly if it were understood that its use tended to a lessening of dental fees, the parental veto with regard to this plant might sometimes be modified.

The antiseptics I generally use in my own practice are eucalyptus oil, iodoform, carbolic acid, listerine, and oxide of zinc. The latter substance is, I believe, of immense value in proper combination with carbolic acid for conservative treatment of the dental pulp—in fact I look upon it as my sheet-anchor, a careful selection of the cases in which it is used very rarely resulting in failure by death of the nerve or in discomfort to the patient. In very badly decayed teeth of children, where the nerve is not exposed, but has only impoverished bone over it, I use this preparation. I remove the greater part of the decay at the first sitting and place a thick layer of the oxide and carbolic acid, eighty per cent. with eau de Cologne formed into a thin paste, over the floor of the cavity ; I leave this for a week or so, when the tooth can be more carefully excavated and filled with Sullivan's cement or osteo. I trust to this same preparation in adult teeth where exposure has taken place, and when, from objective, or subjective symptoms, it has been decided that the nerve is presumed to be healthy and will warrant conservative treatment. It is, I believe, due to the care exercised in the selection of such cases, and suitability of position for applying agents, that credit or discredit is brought upon this class of operation. Although, no doubt, it is better to leave at times a little impoverished bone over the nerve, rather than expose it, I am, even with the aid of antiseptics, very chary of leaving decay under such circumstances. Absolute isolation from the fluids of the mouth alone will prevent the progress of decalcification in such a position as this. The power of an antiseptic becomes spent, and any accident to or wearing away of the filling would immediately light up the activity of the decay with probably the worst results to the nerve. In arguing thus, I am not unmindful that in some positions in the mouth superficial decay may in hard teeth be non-progressive for a length of time. The removal of teeth, and the consequent lessening of crowding, will often produce this result and greatly retard pre-existing decay; but where the dentine has been invaded by decay, my experience is that it must be removed by either polishing or stopping, as no antiseptic will be of avail if the fluids of the mouth still have access. Where there has been severe toothache, periodical, or persistent in character, and presumably indicating disorganization of the nerve structure, I do not attempt to save the nerve, nor do I believe that any application or antiseptic yet discovered will enable us to do so with safety, except perhaps in rare instances. I may here say that my belief in amputating the diseased portion of the nerve, as I have seen recommended, is no greater than that of digesting away the diseased portion with pepsin porci. In a favourable case of exposure, the exposure being slight, and from, say, a traumatic cause, I as soon as possible touch the spot with strong carbolic acid —if it is slightly warmed, so much the better for relieving the pain. The anodyne character of carbolic is, I think, in cases of this kind, apart from any antiseptic property, that which places it in the very first rank. After any pain or bleeding have ceased, I pass over the point of exposure very lightly a thin paste of the oxide of zinc and carbolic acid, conveyed on a pellet of cotton-wool; over this I place a layer of vegetable parchment, or fine blotting-paper, covered also with a rather thicker film of the paste; I complete the operation with an oxychloride filling, the first layer near the nerve being very thin, and, of course, placed in position with a minimun amount of pressure, nothing being more fatal to a capped nerved than pressure. The oxychloride I find best is Ash's rock cement, the grain of which is extremely fine, and it sets with reasonable rapidity.

Should it be found necessary to destroy a nerve and remove it, I fill the extremity of the fang with the same preparation of oxide of zinc and carbolic, using a few fibres of cotton-wool, or pumping it up the canal if extremely minute. I believe in such cases—and in such cases only—in what is called immediate root-filling, the fangs being necessarily in an aseptic condition. The larger part of the root-canal and nerve cavity when it is not used as a retaining point for anchoring the filling of the crown, I fill with chloroform and gutta-percha. If anything then goes wrong with the filling, the fang remains healthy.

It is in commencing the treatment of root canals in dead and neglected teeth that I believe the preparations of mercury are most useful, as I think they probably have a greater penetrating power on remote portions of the dentinal canal where it has been invaded by microbes. So far, I have found the preparations of mercury less liable to stir up a dormant abscess at a root of a tooth, carbolic--from, I suppose, its property of coagulating albumen so readily—being specially liable to do this, either by passing through the apical foramen, or plugging it up with coagula, and so arresting any discharge that might have taken place into the canal. Mercury is not a deodorant; it does not at first have an appreciable effect on the offensive and characteristic odour of dead teeth; but I take it that its action in preventing the multiplication of bacteria is not to be discredited by this. As a deodorant, after carefully opening up and washing out the nerve canals, I use an application of eucalyptus oil. In the treatment of dead teeth I think all will agree that they have some failures, or at least but partial successes. I have frequently seen gum-boils which have disappeared at the roots of dead teeth, when treated antiseptically, reappear after a time; this I believe must be dne often to a reabsorption back into the root canal and decomposition ensuing. The after-success and comfort of dead teeth is in pretty direct proportion to the care and choice of substance with which the fangs are filled. Theoretically the old plan of filling at least the apex of the fang with gold was a good one, but from the difficulty and danger of attempting it, except in very favourable cases, it has, I fancy, fallen into general disuse. Of the method of applying antiseptics, I have said but little. The importance of using the rubber-dam is obvious when such strong applications are being used—besides, it enables cavities to be made perfectly dry, and isolated from the rest of the mouth.

I have, I feel, only alluded in a passing way to the various phases of this question, speaking of bacteria only in general terms, but the instructions received from our President were to introduce this subject for your discussion. I therefore await with interest the various expressions of opinion, well knowing that amongst the members of our Society are many able microscopists, and observers, who have gone far more deeply into the question of antiseptics than I for a moment can claim to have done.

ON THE RELATION OF RICKETS TO SOME FORMS OF ODONTOMES.*

By J. Bland Sutton, F.R.C.S., Honorary Member of the Society.

On several occasions I have exhibited to this Society under the name of *fibrous odontomes*, tumours formed by enlarged and thickened tooth follicles, taken from the jaws of goats and from a dasyure. I also ventured the opinion that certain tumours of the mandible and antrum of the human subject were probably of this nature. It has long been known that in rickety children the teeth are late in appearing; this was attributed by Mr. Shaw† to diminution in the size of the jaws and the large size of the teeth. Some years ago I endeavoured to point out that the delay must be attributed to abnormal thickness of the follicles. That the tooth-sac should be thickened in rickety children need not surprise us, when we remember that this remarkable disease affects most particularly those membranes engaged in the production of bone, and as the tooth-sac is responsible for the cementum of the tooth, and a part at least of its alveolus, we should expect that in rickety mammals, including children, the follicles would be abnormally large.

In nearly all the specimens of fibrous odontomes which I have shown to the Society, the skeleton of the mammal possessing them was severely affected with rickets; in each case the tumours were multiple and symmetrical; those which occurred in the upper jaw were much larger than those found in the mandible: histologically they were composed of young fibrous tissue, with laminæ of ill-formed bone interspersed, and presenting here and there giant cells. In many cases the fangs of a well-formed tooth were embedded in the tumour, especially in those found in the upper jaw, but in those examined in the lower jaw the tooth was as a rule absent or rudimentary. The larger size and higher development of the tumours when invading the antrum is to be explained by the circumstance, that they meet with less resistance than when compressed between the two plates of the mandible.

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*A paper read before the Odontological Society of Great Britain.

† Med. Chir. Trans., vols. xvii and xxvi.

The association of rickets and fibrous odontomes is not casual, as the following specimens will serve to show. Two young Assyrian bears were killed at the Zoological Gardens because they were deformed by rickets, and on dissection they were found to be the most rickety mammals I have ever examined. The skull bones, especially those of the vault and face—membrane formed bones—were greatly thickened, yet so soft that they were readily cleft by means of a stout knife. The follicles of the molar teeth, especially the last molar in each upper jaw, were greatly enlarged, and projected as rounded fibrous tumours into the orbits and zygomatic fossæ. These thickened follicles resemble, in their naked eye characters and minute structure, the fibrous odontomes found in the jaws of the goats and the dasyure. A specimen from the bear was shown.

The skulls of the bears exhibited the appearances typical of rickets, and one is shown in section in order to show that the enlargement affects chiefly those bones pre-formed in membrane.

These facts induced me to learn more about the history of certain tumours of the jaws preserved in the museum of the Royal College of Surgeons. I found two specimens in that collection which clearly belong to the group we are considering.

The first specimen is thus described in the catalogue :—

“ Sections of two myeloid tumours developed symmetrically in the angles of the lower jaw. Their outer surfaces are covered by the external layer of compact tissue of the bone which they have expanded and thinned.”

These tumours were removed by Mr. Heath from a boy seven-and-a-half years old, with rickety legs, but he was well nourished when the tumours were removed. They began when he was a year and a half old, and increased slowly and painlessly. He had a good deal of difficulty with his teeth.

I have carefully examined these specimens and have no hesitation in pronouncing them to be overgrown tooth follicles due to rickets. It must be remembered that a few myeloid cells are not sufficient to make a myeloid sarcoma ; the giant cells should make up a very large proportion of the tumour.

The long history of the case—six years—the general characters of the tumours, their symmetry, and the rickety constitution of the boy, strongly support the view that the tumours in this case are of the same nature as those in the bears, goats, and dasyure. The curious square-shaped look of the boy's face, is very characteristic, and was strongly marked in the case of the goats'.*

There is a somewhat similar specimen in the same collection presented by Mr. F. Smith. It is thus described in the catalogue :—

"A portion of the inferior maxilla from near the symphysis, within which lies a fibro-sarcoma surrounded by a thin shell of bone consisting of the expanded walls of the jaws. The tumour is removed from the section in order to expose a small irregular mass projecting into the upper part of the cavity, and having the appearance of a misplaced, ill-developed denticle. The tumour was firmly attached to this body by fibrous tissue, but was loosely connected with its bony capsule. It consisted microscopically of spindle cells and nuclei, developed in places into ill-formed fibrous tissue."

The general characters and minute structure of this tumour in my opinion proclaim it to be an overgrown tooth follicle.

The view that tooth follicles, enlarged and thickened by rickety changes, may become later in life hard odontomes, need not surprise us. The long bones in the progressive stage of rickets are very soft, and may be cut with an ordinary knife. Should the child recover, these thickened and soft bones become as hard and dense as ivory. It is far from my purpose to insist that all odontomes are to be attributed to rickety changes in the follicles ; but that rickets is responsible for some soft and some hard varieties seems very probable. I also had in view the fact that the study of what is called Comparative Pathology will, if persistently followed, throw much light on obscure morbid conditions in man, and the nature of odontomes is one of them.

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* For complete details the student may consult Heath's "Injuries and Diseases of the Jaws."

British Journal of Dental Science.

LONDON, MAY 15th, 1889.

AMALGAM FILLINGS AND SORE MOUTH.

In a paper read before the Odontological Society at its April meeting, Mr. Jonathan Hutchinson attacked Amalgam fillings saying that he *occasionally* found they were the cause of intractable sores and that it was *very usual* in his experience to find an irritable sore opposite a black filling.

Many years ago, when amalgam fillings were very little known, it was very common to hear them absolutely condemned by very able operators, and chiefly for the same or similar reasons as those advanced by Mr. Hutchinson, they caused ptyalism, and other inflammatory conditions of the mouth, and consequently it became a dire malpractice to insert an amalgam filling under any conditions. The evidence brought forward in support of the assertions of old was weak and unscientific ; that advanced by Mr. Hutchinson although orderly, was absolutely inconclusive. The one definite case mentioned, the most definite he had met with, only tends to throw grave doubt upon the real cause of the mischief. It was suggested that the explanation might be sought in the direction of chemical solution, and in support of this view the fact that copper amalgams stain the dental tissues was adduced. Experience shows, however, that if solution does take place in these fillings it is extremely slow, the quantity dissolved in a week's time must be infinitesimal, and so far as the evidence of those best able to pronounce an opinion in such a matter goes, it tends to discredit the view that the explanation is to be sought in this direction. If solution were the probable explanation the sores should be general and not on the tongue or cheek opposite a filling. There are two points in the paper which tend to strongly uphold the view that the sores were caused by a sharp or jagged edge to the tooth, viz., the sores are described as opposite the tooth filled, and that they are irritable, but without any other special characteristic.

The opinion expressed by Mr. Newland Pedley that the sores were caused by the irritation of a jagged edge was, it was very clear, the opinion of the members of the Society. And it is of considerable importance to notice, that although some of the gentlemen present presumably must have seen some of Mr. Hutchinson's cases, not one voice was raised to support his contention. In addition to the evidence of the Odontological Society, the testimony of probably the greatest authority on amalgams, Prof. Foster Flagg, is most emphatic. He had frequent complaints of this kind, and cases were sent by others to him, illustrating the ill effects of amalgams, but he invariably cured the patients without removing the amalgams : in the face of that testimony, Mr. Hutchinson's views cannot have great weight.

DENTAL STUDENTS' ACHIEVEMENTS AT GENERAL HOSPITALS.—We have very great pleasure in hearing that the Pereira Prize (which is for the best reports of Medical cases in the Wards during the year), of Charing Cross Hospital, has been awarded to two Dental Students. The Examiners were unable to decide which was the better of the papers of Messrs. A. H. Smith and T. E. Constant (both House Surgeons at the Dental Hospital of London), and the prize was consequently awarded to both. Such success is most creditable, and must tend to maintain the high reputation our students have already won for themselves.

How to Clean the inside of a Vulcaniser.—It is suggested to us that a ready way of cleaning the inside of a vulcanizer is by having a thin copper lining, to be withdrawn when desired.

Remarks upon the Dentists' Act.—Under this title a clearly-worded and really useful leaflet has been printed and sent to us, which we believe the author proposes to distribute and allow others to dispose of in the same way. It explains in concise and plain language the distinctions between dental diplomas, and offers hints whereby the public may decide for themselves who are *bona fide* dentists and who are quacks. It refers to dental advertising, which it very properly condemns, and lastly considers "false titles," R.D.S, R.D.M.C., and so on. Altogether it is an excellent little production and should do much good. It may, we believe, be obtained from Mr. Johnson, printer, of Nottingham.

German Dental Congress at Hamburg.—The annual congress of German dentists was held at Hamburg on the 23d-25th of April, being attended by about 70 representatives from different districts of the Empire besides members of the profession from Austria, Holland, and the United States. Great Britain was unrepresented. The chief subject discussed was the method to be adopted to insure increased dental efficiency. As a means thereto it was proposed that a complete education at a German gymnasium should be a *sine quâ non* for aspirants, and that the duration of the period of study should be extended from four to six or eight terms. Unanimity on the point not being arrived at, a committee of five members was elected for the purpose of ascertaining the opinion of all German dentists on these points, the report to be ready for next year's congress, which, it was decided, should be held at Berlin in April next. Of the scientific papers read, the most interesting were those of Dr. Fläche (Bremen), in regard to the use of electricity as a dental medium ; Dr. Brandt (Berlin), who exemplified the newest methods of closing defective palates ; and Dr. Sachs (Breslau), who reviewed the materials in use for filling defective teeth. The last-named lecturer added interest to his subject by practical demonstration with a human skull, the teeth of which he filled with various materials, completing the set with artificial specimens. Interesting debates followed, and, as these were reported, the proceedings of the congress, which will be available to foreigners in the profession, may be regarded as an international service rendered to suffering humanity.

THE BARBER SURGEONS AND BLACKSMITH DENTISTS.—We are not habitually liable "to drop into poetry", but the following stanza which has been taken out of an old 18th century volume, and sent to us, is too good to be lost.

Describing a Barber Surgeon—

His pole with pewter basons hung,
With rotten teeth in order strung,
And cups, that in the window stood
Lin'd with red rags, to look like blood,
Did well his three fold trade explain,
Who shaved, drew teeth and bleedes a vein.

" The art of drawing teeth has of late been greatly improved on, and many persons perform the Dentists' art alone. A pair of blacksmith's pincers were formerly used."

An old dame to the blacksmith went,
For her last tooth gave her pain,
Quoth he "This tooth I soon can draw,
And by it some credit gain."

So he the pincers took in hand,
And pulled with might and main,
But then slipp'd off we understand
Which much increased the pain.

This made the doctor turn about,
And sigh in doleful dumps,
"If I can't get a whole tooth out,
What must I do with stumps."

Tobacco Smoke as a Bactericide.—The action of tobacco-smoke on certain pathogenic micro-organisms has been recently studied by Dr. Vincenzo Tassarino, of the University of Pisa. "He devised an apparatus consisting of two funnels placed with their mouths opposed, and sealed with paraffin. To each small end of the funnel, tubes were attached, suitably arranged so that a cigar could be placed in one end, while the bacteriological smoker inspired at the other. The smoke was thus drawn into the large space made by the funnels, in which was a plate with various cultures of micro-organisms—control cultures were also used. The microbes were subjected to the smoke for from thirty to thirty-five minutes, during which time from 3¼ to 4½ grammes of tobacco were used. The micro-organisms tested were the spirillum choleræ Asiaticæ, spirillum Frinkler and Prior, bacillus anthracis, bacillus typhi abdominalis, bacilli pneumoniæ, staphylococcus pyogenus aureus, and bacillus prodigiosus. The kinds of tobacco used were the large Virginia cigars, the large Cavour cigars, the small Cavour cigars, the best cigarette tobacco."

"The results show that tobacco-smoke has the effect of preventing the development of some micro-organisms entirely, and of retarding that of others. The Virginia cigars seemed to have the most powerful effect, while cigarette smoke had only a retarding influence, and did not entirely check the growth of any form."

"Artful Aids for Artless Maids"—A correspondent favours us with the subjoined cutting from a Local Paper : "Lilly.—You are quite right ; soft gums are manufactured to wear over the natural ones. These are supposed to add a roundness to fading faces, like "plumpers" which formerly had a large sale, and were worn in the cheek for the same purpose. These artificial gums are said to make five years' difference in the appearance ; they are somewhat expensive however."

THE ST. JOHN'S AMBULANCE ASSOCIATION AND THE DENTAL PROFESSION.—The St. John's Ambulance Association will not, says a correspondent, admit as honorary lecturers in the porvinces, gentlemen holding the qualification L.D.S. (cum curriculo). If their medical committee understood the comprehensiveness of the dental curriculum, surely our services would be accepted. Cannot some leader in the profession get this exclusiveness corrected?

TOOTH POWDERS OF OLD.—Here is another collection from Notes and Queries,—From 'A General Practice of Phisicke,' published by Thomas Adams, 1617, fol., I extract a receipt which proves very conclusively that the tooth-brush was not in common use at that date :

" *To make and to keepe the teeth cleane.*

" Take two drag. of Date stones, red Corall prepared three drag. Lupins, and the rootes of the yellow Flower-de-luce, of each three drag. beate all that is to be beaten and afterwards make a confection of it with clarified hony which must be so hard that you may make small placents or trocisces of it ; dry them in the shadow : when you will use them, then dissolve one of them in wine or vinegar, and wash the teeth therewith every morning *when thou has first rubbed them well with a cloth.*"

All this writer's directions for managing the teeth insist upon scrupulous cleanliness, which is to be attained by " washing," by " rubbing with a coarse cloth," and by rubbing them " last of all with a piece of Scarlet dipped in Hony." The final direction runs thus :—

" The teeth also are alwayes to be kept cleane and pure, and not to picke them with an iron, but with a toothpicker made of *Lentiscus*, which is the tree whereof droppeth Mastick, which is much commended for the teeth : remember also to wash the teeth after every meale."

Many other seventeenth-century books might be quoted from, for the same purpose, down to Mistress Hannah Woolley, who told her pupils in 1682 that

" you ought to keep your *teeth* very clean by *rubbing* them every morning with *water* and *salt*—You may, if you please, try Mr. *Turner's* Dentrifrices, which are every where much cried up."

'The Toilet of Flora—for the Use of the Ladies,' London, 1784, gives a receipt for making

"*A Coral Stick for the Teeth.*"

"Make a stiff Paste with Tooth Powder and a sufficient quantity of Mucilage of Gum Tragacanth; form with this Paste, little cylindrical Rollers, the thickness of a large goose-quill, and about three inches in length. Dry them in the shade. The method of using this stick is to rub it against the teeth which become cleaner in proportion as it wastes."

Directions are also given in this work for the preparation of certain "roots that are used to clean the teeth." Lucerne and liquorice roots are specified. They are to be boiled and cut into pieces of six inches long. Each end of the root is then "to be slit with a penknife into the form of a little brush, and they are to be slowly dried, to prevent their splitting.

"They are used in the following manner. One of the ends is moistened with a little water, dipped into the Tooth-Powder, and then rubbed against the teeth till they look white."

If stronger measures are needed (for the removal of tartar, for instance),

"take a large skewer, on the end of which is tied a piece of linen rag, dip the rag in the medicine and rub the teeth and gums with it."

It is possible that these prepared roots, slip "into the form of a little brush," may be the connecting link between the tooth-stick (the use of which seems to be general among savages) and the modern tooth-brush. (ALFRED WALLIS.)

In a manuscript volume of the private account of Francis Sitwell, of Renishaw, from August 20, 1728, to March 2, 1748, the following entries, occur:—

1729, Sept. 6. "Disbursed at London [among various items] a silver tooth-stick 8d."

1729, Oct. 9. " Disbursed at London [among various items] a tooth Brush 4d."

This entry is only ten years later than the entry I gave relating to tooth-powder at p. 292, (N & Q) and distinctly shows tooth-brushes are not of recent introduction. In the same volume I find :—

" Oct. 31. Gassein powder 2s."

Whether this is tooth-powder is uncertain. On June 24 in the same year F. Sitwell pays 3s. 6d. for " a Bottle for my teeth," which I cannot explain. (ALBERT HARTSHORNE.)

Abstracts of British & Foreign Journals.

INTERNATIONAL DENTAL JOURNAL.

VOLUNTARY TOOTH MOVEMENT RESULTING IN EXCESSIVE INTER-DENTAL SPACES.

BY S. H. GUILDFORD, D.D.S., PH.D.

This is the condition in which the teeth instead of remaining in contact become separated by spaces, more or less great, constituting a deformity which is not only unsightly, but one that carries with it the possibility of lessened usefulness. The condition is met with in a variety of form and degree and under varying circumstances. (a) At the time of the second dentition, the erupting teeth, especially the anterior ones of the superior arch, take a regular position in the arch, but leave a large interdental space, this space is diminished or obliterated sometimes by the teeth erupted later seeking their position in the arch. Should however, certain teeth be lacking or fail to erupt, the spaces remain. This is illustrated by cases where centrals are erupted widely apart, and the laterals are absent or erupted late subsequent to eruption of cuspids and consequently outside the arch. (b.) Interdental spaces of less extent and evenly distributed are frequently found in young patients, and are clearly due to inherited peculiarities. Spaces are unavoidable when a child inherits the large jaw of one parent and the small teeth of the other. (c) There is another class of cases of great importance and obscurity—it is that in which the teeth at maturity are in contact, but later in life become spaced. The formation of the spaces is extremely slow, and the spaces are generally observed between the age of 25 and 50. The movement of the teeth has no apparent cause, and the question arises—"Why should this condition be met with and what are the causes operative in its production." But few theories have as yet been advanced. One theory refers the deformity to an interstitial growth of the alveolar septum, which is most likely to occur in the line of sutures both upper and lower. This would account only for median separations. Separations between other teeth occur—moreover a depression between the separated teeth often occurs. A second theory refers the separation to the extraction of the posterior teeth. This theory indicates a factor, but not the causes of the movement. For teeth immediately adjoining a space created by extraction frequently move voluntarily to a greater or less extent. Some other theory must explain those movements, which bring about separations at a distance from a created space. "In all the cases which have come under my notice where separations occurred in the midst of a number of firm and regular teeth, I have observed that the gum tissue on the inter-dental space was hypertrophied and inflamed." The tough elastic tissue that covers the alveolar arch and passes between the teeth is of such character that if irritated and enlarged it would exercise considerable pressure in the adjoining teeth, and in time cause a space—similar to that produced by a rubber wedge. The cause of the irritation is found to be calculus, salivary or serumal, that has been formed on the root and lies under the gum. The calculus is always found on the side opposite to the direction in which the teeth are moving. From what has been written, the following conclusions are deduced. 1. Where teeth have become separated in the line of the arch, opportunity for such movement has been furnished by the extraction of one or more teeth, usually the first permanent molar. 2. Where only a few teeth have moved out of position, and they are situated next to the tooth that has been extracted their movement is due to an unexplained tendency on the part of teeth to change their position when circumstances favour it. 3. Where interdental spaces occur at a distance from the point where teeth have been lost they are caused by the gradual and continuous pressure of inflamed gum tissue, and such irritation is directly due to a deposit of calculus at some point upon the root of the separated teeth. This is a condition which may be *prevented*, by the preservation of the full complement of teeth, it may be *ameliorated* by the thorough removal of deposit from the roots of teeth and the treatment of the gum. The occlusion should be carefully noted and corrected if necessary.

ARCHIVES OF DENTISTRY.

DECIDUOUS TEETH FILLED WITH OXYPHOSPHATE.

By Dr. J. A. Robinson, Jackson, Mich.

Two years ago, the author described his success in treating children's deciduous teeth with oxyphosphate over exposed pulps that had been painful, instead of extracting them. He stated, at that time, that he filled the entire space between the proximal cavities without any separation. He now reports the practice to be a success. One patient was a little boy, three years old, who had *every tooth decayed*. The child is now nearly seven years old, and some of the teeth have been filled several times, as not spend much time is spent in preparing the cavities ; none of the teeth have been extracted, and they have not troubled him many times with aching. This boy is a delicate little fellow, with countenance as white as white paper, and teeth to correspond. He has observed, every time a filling has come out, that the cavity was lined with a leathery substance, much the colour of sole-leather, and sometimes as dark as black decay. The three times he has refilled a tooth, the pulp was alive, but the pain was immediately stopped by covering it with oxyphosphate, mixed with carbolic acid first, then with a cap of oxyphosphate in the usual way. Last week he refilled the two lower molars, and on examination it was found that both the pulps were alive, one of them bleeding, though they had been kept more than three years. The teeth of children are more difficult to treat than teeth of adults. For more than thirty years the writer has been capping exposed pulps, in all stages of inflammation, with gratifying results; more so than by destroying them with arsenic. A short time ago he had nine cases at one time that were unfinished for want of time. The best practice is to let the oxyphosphate become hard and solid before filling, if it is to be permanent, then fill the cavity in sections; first fill at the cervical wall in proximate cavities, about half full before you remove the oxyphosphate from the outcome, then cut away and remove and fill and finish. If the cap moves, or is displaced, the dust may fall on the pulp and create inflammation. Where there is only periostedal inflammation, bathe in chloroform and your patient will be made happy in a few moments. He does not believe that persons run away from their dentist as often as is suggested; persons are not so fond of paying twice for the same operation, where the dentist is well established and friendly with his patients. Who is to decide whether the pulp is dead if it is never troublesome?

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, March 4th, 1889; Mr. Henry Sewill, M.R.C.S., L.D.S., President, in the chair.

The minutes of the preceding meeting having been read and conrfimed,

Messrs. Arthur T. Crowther, L.D.S., 74, Mortimer Street; Alfred Barnard, L.D.S., Rostherne, Upper Richmond Road, Putney; were elected Resident, and Messrs. William R. Ackland, M.R.C.S., L.D.S., 5, Rodney Place, Clifton, Bristol; W. A. Rhodes, L.D.S.I., Cambridge: W. Breward Neale, L.D.S.I., Birmingham; George Oliver Richards, M.R.C.S., L.D.S., Onslow House, The Green, Richmond, were elected Non-resident Members.

The Librarian (Mr. Ashley Gibbings) announced that Messrs. Claudius Ash & Sons had presented to the Society's

Library a parchment relating to a patent granted in the 31st year of the reign of George the Third to Nicholas Dubois de Chemant, of Paris, for the manufacture of mineral teeth.

The President then called upon Mr. Howard Mummery for his communication.

A young lady, aged fourteen, wearing a lower regulation plate, came to me in January, to have it adjusted. When I saw her she told me that while standing on the doorstep she felt something come loose in her mouth, like a piece of gum. On looking into the mouth I saw a small pendulous piece, apparently of gum tissue, hanging from the alveolar margin of the upper jaw, over the position of the unerupted left upper second molar.

My first impression was that the gum being slightly turned over the coming tooth, she had detached a piece by biting upon the capping of the regulation plate ; but I found that this capping was separated by a considerable interval from the upper gum when the mouth was closed.

The pendulous portion was about half an inch long, and caused considerable discomfort. I therefore divided it with a pair of scissors, but the patient giving a slight start, I failed to cut it off quite close ; so seizing the small piece that was left with a pair of plugging pliers, I found it drew out from the gum, leaving a slight depression.

On examining the piece first removed, I felt something hard at the end of it, which proved to be a small nodule of calcified tissue, in shape very much like an acorn. Under a low power of the microscope, it exhibited the appearance shown in the diagram, which I copied from a drawing made at the time.

The stalk of the nodule consisted, histologically, of the ordinary elements of gum tissue, and was firmly adherent, as shown in the diagram, to a loose capsule or sac, which in its turn was continuous with the calcified nodule and formed with an elevated ring of calcified tissue surrounding the nodule—the cup of the acorn, the rest or acorn part being a rounded mass of the calcified tissue. I examined it in glycerine and water, and by the accident of the entanglement of an air bubble, detected that the nodule was covered with a very delicate membrane continuous with the capsule.

After making drawings from it in different positions, it being too minute to section in any other way, it was decalcified in a weak acid solution and examined carefully at intervals to detect if there was any enamel which might be destroyed by the action of the acid. When softened sufficiently for cutting, there was no *débris* of disintegrated enamel, and the whole nodule was uniformly softened. It was embedded in paraffin and lard and sections cut with the microtome; these sections were not very satisfactory, as the minute size and rounded shape of the specimen made it very difficult to keep it steady in the embedding material.

The sections stained with hæmatoxylin show a radiating arrangement of dentinal tubules, and a thin peripheral layer in thin parts of cementum, with numerous lacunæ: this portion corresponding apparently to the ring of calcified tissue at the edge of the part I have called the acorn cup.

It appears therefore to be an odontome connected developmentally with the tooth papilla and follicle, no enamel being present, but only dentine and cementum. Its position is somewhat puzzling, as it is very difficult to understand how it came to be connected with the pedicle in this peculiar manner, and why it became detached. It was apparently liberated by the commencing eruption of the second molar, the outer one-third of the crown of which was distinctly visible a week afterwards. So far as the structure of the second molar can now be seen, it is a perfectly normal tooth.

In Wedl's Atlas of the Pathology of the Teeth two nodules are described which fitted like caps on to the crowns of lower molar teeth, but these were composed in great part of enamel consisting of that tissue and dentine intricately blended, and showing no well-developed cementum. In the present instance, owing to the absence of enamel, one would imagine that it had not occupied a similar position, as at first seemed probable, it being apparently liberated by the commencing eruption of the second molar tooth. I believe it is rare to find these abnormal growths connected with the upper teeth in man.

I have seen the case again to-day, and the patient said that on Friday last another piece fell into the mouth in the same manner; but she was unable to come to me at once; she therefore pushed the little piece up again, and thought it had remained there, but to my disappointment there was no trace of it to-day—it had probably become detached and swallowed. The tooth, however, is now fully erupted. She described this piece as feeling in the mouth exactly like the first, and about the same length. If it was a similar nodule (as one would imagine from her description), the two seem to have been situated one on each side of the erupting molar.

Mr. W. A. Maggs showed a good specimen of intrinsic calcification of the pulp in a left lower wisdom tooth. The calcification was not quite complete towards its superior surface, and it might fairly be called a "pulp stone."

The tooth was much decayed, and severe and persistent neuralgia of that side of the face led to its removal. Mr. Maggs presented the tooth to the Museum.

Mr. Ackery was of opinion, from examination of Mr. Maggs' specimen, that it resembled more a case of invagination of the dentinal tissue than a calcification of the pulp. It would be very interesting if other members gave their views upon the subject. Of course the only way to settle the question was an appeal to the microscope.

Mr. F. J. Bennett was about to make a similar remark. Mr. Maggs' specimen was a case of induplication of the fang, and if a cross-cut were made of the tooth, the real nature of the disease would become apparent.

The President : As Mr. Maggs has kindly presented the specimen to the Society, it would be well that an examination be made, and I therefore suggest that Messrs. Maggs, Ackery, and Bennett be constituted into a sub-committee to investigate the matter and give the Society a report at our next meeting.

The President then called upon Mr. H. Lloyd Williams for his communication on "A case of Salivary Calculus."

Mr. Lloyd Williams said : The calculus I have the honour of showing this evening was extracted from the mouth of a strong healthy man, æt. twenty-eight, on the 18th February.

The man came to my friend Dr. Clark, of Luton, complaining of a small swelling beneath the left angle of the jaw ; and that whenever he sat down to eat, or even smelt any savoury food, the swelling would increase to several times its former size, and become very painful. He had suffered in this manner for four years, had consulted several medical men, and had even visited one hospital without relief ; he was several times advised to have the tumour excised.

To test the man's statement regarding the swelling, an apple was given him ; even at the sight of it the swelling commenced to increase, and while it was being eaten reached a size several times larger than previously.

On inspecting the mouth, the only apparent symptom was that the left sublingual gland was more prominent than the right. On careful bimanual examination a slight hardness was felt in the floor of the mouth, but on account of the inflammatory thickening of the surrounding tissues it was impossible to clearly define the limits of the calculus. By placing one finger firmly on the floor of the mouth in front of the seat of the calculus, and pressing upwards and forwards from behind, it was possible to see a small portion through the mucous membrane.

Whilst I held aside the tongue Dr. Clark cut down upon the calculus and picked it out with a small dissecting forceps. The small piece was broken off during one attempt at extraction. The foreign body was somewhat deeper than we had expected.

Its direction and its shape induce me to think that the growth of these calculi is similar to that of calculus on the tooth. There is first a nucleus formed—generally, I think, at the bend where the duct turns to end on the summit of its papilla ; afterwards growth takes place by addition to its side and posterior extremity.

The President then called upon Mr. R. H. Woodhouse to open the discussion upon " Antisepticism in Dental Surgery."

DISCUSSION

Upon Mr. Woodhouse's Paper on Antisepticism in Dentistry.

The President said : I am sure all will agree that Mr. Woodhouse has most ably opened this discussion, and has earned the thanks of the Society.

A discussion on antisepticism may probably with advantage be opened periodically at our Society, and I trust this is only the first of an annual series. The general principles upon which the method is based, the chemistry of the agents employed, and the special technicalities of antisepticism in dental operations—all these form topics of which the interest will continue to grow from year to year with the discovery and aggregation of new facts. I trust the discussion may be kept closely to the point ; we need not, for instance, enter upon questions of pathology or diagnosis. We may rather confine ourselves to examination of general principles, and discussion of the methods and means of dealing with the different phases of disease calling for antiseptic treatment within and around the teeth. I will confine myself to some few points, and before all I would draw attention to the efficacy of perchloride of mercury, the agent which experiment proves to be the most potent of all antiseptics. The objections which limit the use of this drug in general surgery do not apply to dentistry, for practically the danger of its absorption or passage into the system in any poisonous quantity does not exist. Not more than a few drops of solution is used on any single occasion—a quantity which, if absorbed or swallowed, would not be harmful ; but with ordinary care no more than an infinitesimal portion of the minute quantity used—if any—could possibly pass into the system.

The special value of the perchloride is due to the fact that one thorough application of a week solution is enough to destroy micro-organisms ; to sterilise organic matter, and put a stop at once to putrefaction and fermentation. In every case in which it is desired to render a cavity aseptic and to keep it in that condition, this drug is to be absolutely relied on. In pulpless teeth a very much stronger solution may be used than would be safe in general surgery. I use a solution of two grains to the ounce of absolute alcohol. Where the pulp cavity and canals are putrid, such a solution acts like a charm. It is of course always desirable to avoid the risk of pumping or forcing septic material through the apices of roots in clearing them of *débris*, but the perchloride minimises this danger. The pulp cavity and nerve canals must be cautiously cleared of their contents, and during the process frequent swabbing with perchloride solution must be performed. At intervals the hot air syringe may be used. Organic particles by this means become desiccated and eagerly absorb the alcoholic solution when next pumped into the roots. This may be proved by experiment out of the mouth. A few—very often one—thorough dressing in this way will render a putrid canal fit to fill. For root fillings I use invariably absorbent cotton saturated with the perchloride solution, and with as much iodol as it will take up, shred after shred being tightly packed in, and after evaporation of the spirit being hastened by the use of the hot air syringe. The pulp cavity and nerve canals I seal, as a rule, with "Fossiline," carried in with a few fibres of absorbent cotton. I am strongly opposed to the practice of filling roots—with rare exceptions—with metal, and I have now had experience over enough years to enable me to be positive the principles of the treatment described are sound. For many years I have used absolute alcohol—indeed, I must credit myself with its introduction into dental practice. Before perchloride of mercury and iodol I employed iodoform, and before that oxychloride of zinc. This treatment tested by time has been successful, in spite of the fact that I am by no means what is called a good operator, having not a trace of that innate endowment which provides for its owner obedient and easily educated fingers.

Mr. F. J. Bennett: Sir, the pleasure we have derived from the introduction of this discussion has been very great. Indeed we know Mr. Woodhouse as such a practical man that any remarks he might make would be sure to receive our careful attention. I am especially glad to hear his remarks in regard to capping the pulp. It has always appeared to me, in exposure of the pulp, that in many cases before we reach the pulp we find it is disorganised. In my own experience I have found that the plan Mr. Woodhouse advocates, or a similar one, has been most successful. My colleague, Mr. Forsyth, has used oxide of zinc and oil of cloves for capping, and has finally filled the tooth with osteo.

With regard to drugs that are favourites, I know that perchloride of mercury is the most powerful we have, but I think we should distinguish between a good germicide and what suits our own particular case. As I found a purely alcoholic solution evaporated too rapidly, I have therefore employed 2 grains perchloride, ʒij rect. spirit, ʒvj distilled water. A very valuable use of perchloride of mercury—which, by the way, Mr. Woodhouse did not refer to—is in sterilizing instruments. I have used eucalyptus oil, and latterly I have been recommended to try iodol; the value of this, I believe, depends upon the amount of iodine that is set free in the canal. Iodoform, although it contains more iodine, parts with it less freely than does iodol.

Dr. Mitchell: In regard to the liberation of iodine from iodoform, the following are the means I have used to that end. Having applied iodoform to the cavity on cotton-wool dipped in alcohol, I force hot air through the cotton-wool from my hot-air syringe—which has a $\frac{1}{16}$th inch opening—supplied with hot air from a Bunsen; by that means I get the benefit of the iodine in the roots, not accessible by other means.

The President: I do not wish to set the bad example of speaking twice, but I ought to have remarked that absolute alcohol has the effect of desiccating the particles, which on a second swabbing take up the solution and become sterilized.

Mr. W. J. England : I was indebted some four-and-a-half years ago to Mr. Hern for the recommendation of perchloride of mercury as a dressing. You can carry your cotton-wool saturated with it quite well on a Donaldson to the canal. Mr. Bennett need have no fear of its drying too quickly ; it will take two minutes at least. I use a strong solution of five grains to the ounce. On evaporation taking place, perchloride of mercury is left in the form of fine powder on the canal walls and wool which may then safely be left to argue the question with any bacteria that may happen to come that way. Lately I have used iodol in preference to iodoform because it is not so objectionable either in smell or taste, and I am not afraid of any irritation.

Mr. W. Hern : Mr. Woodhouse, I think, struck a very good note when he said, remove the coign of vantage for germs to linger in, also remove the pabulum of the micrococci. I think, Sir, that one of the best antiseptics we are possessed of is a little rotating drill and the syringe—what I may call the hydropathic treatment—first of all. I think that antiseptic drugs should only be used for the removal or purifying the very small portions of septic material that are left. After we have removed the greatest amount that we can with the drill, then wash cleanly out. Mr. Woodhouse spoke of eucalyptus ; he must pardon me if I take exception to using the essential oils, because there is no affinity between oil and water, and in septic conditions moisture is very largely present. By way of illustration I may say that I have taken some micrococci and put them into water with eucalyptus oil ; under the microscope these micrococci could be seen floating out of contact with the globules of eucalyptus, and enjoying themselves unharmed by their environment. For this reason I do not think essential oils are good germicides. Perchloride of mercury has been used at the hospital for some little time now, and I remember asking Mr. England to try it as a lubricant for iodoform.

I had such faith in iodoform that I was loth to part with it, and I still use it, in the same way that perchloride of mercury is used. Perchloride of mercury has a strong affinity for water, and therefore robs the micrococci of one element of their existence, viz., moisture, and is valuable in that respect.

Mr. Betts said: I have read a note from Mr. Charters White stating that had he been able to be present he would have brought forward an antiseptic known as "Kingzett's Bactericide." I may say that in a few cases where I have not felt comfortable in filling a root with a hard substance which I could not afterwards withdraw, I have adopted the plan of drying thoroughly and then putting in cotton-wool with powdered iodoform mixed in it so that the iodine might be freely given off. When mixed with fluids the iodine is less freely given up, and also, as Mr. Hern has pointed out, thorough dryness is more favourable to the destruction of bacteria.

Mr. J. T. Browne-Mason (Exeter): I may say that ever since last August twelve months, I have always filled my roots with dry iodoform mixed in cotton-wool, and with most satisfactory results; it also admits of the advantage of being withdrawn readily if necessary. There is one point I should like explained. I had a case quite recently in which the patient complained of a taste of iodoform six months after I had put on a most successful gold-filling; it was very successful, there was no fistulous opening of any kind, and I am quite at a loss to understand where the taste came from.

Mr. C. S. Tomes: I do not wish to prolong the discussion, Sir, but one speaker after another has got up and spoken of iodoform setting free its iodine. I do not see why it should, but with iodol it is different.

Mr. Ashley Barrett: I would ask you, Sir, as you have had a large experience, how you deal with those advanced cases where the bacteria have affected the dentinal tubes. I can quite believe that the bacilli are sufficiently small to find their way into the dentinal tubes and there increase and multiply. When our treatment with antiseptics fails, may it not be due to decomposition having extended into the walls of the canal, and microbes having penetrated the dentinal tubules?

The President: In the first place Mr. Arthur Underwood has clearly shown in his valuable research on caries that micro-organisms do penetrate the tubes before they become dilated by the changes of caries. I cannot, however, verify the fact, because I have not made any investigations upon this part of the subject. I do not see why, after frequent swabbing with any powerful germicide like perchloride of mercury and dressing with iodol, we should not be satisfied that all septic action has stopped in the canals. There are cases which fail where it is very difficult to make a correct diagnosis, but there are a vast number of cases of putrid teeth which we formerly could not deal with satisfactorily, and which we can now treat with almost uniform success.

Mr. C. J. Boyd Wallis : I think I was the first to introduce to the profession iodoform and iodol. They become practically iodine in their action. Iodoform alone I consider useless as a permanent root-filling. They are very readily absorbed, and very evanescent. If you fill a tooth with iodoform and open it again a short time afterwards, there is no trace of iodoform to be found. With regard to essential oils, I endorse what Mr. Hern has said. I use them as anodynes or deodorants, eugenol is the best. For capping or covering an exposed healthy nerve I believe the best thing is a solution of sulphur in ozonic ether ; it is compatible alike with the nerve and dentine, and the nerve tolerates the pressure admirably. I use various preparations of naphthol, but I prefer the β naphthol. It is a powerful antiseptic, germicide, and deodorant, and so is valuable as a permanent dressing in nerve canals.

Mr. Hern : I understand Mr. Boyd Wallis to say that he finds iodoform very evanescent. I do not know how long he considers "a short time." But I recently took out a filling put in in 1883, and the iodoform was as powerful as ever.

Dr. Cunningham : In the discussion which has taken place to-night, it is interesting to find that the bulk of practitioners are getting successful results from the use of antiseptic drugs. The statements seem somewhat to clash, but there is one point, viz., the extent of the practice of what we may term instrumentation, where the practitioner objects to the reaming out of canals ; of course, in that case, he is obliged to use these drugs very extensively, whereas the operator who uses the dental engine for the same purpose, I think is more thorough, leaving no doubt as to how far micrococci have passed into the dental tubuli, and getting into the tissue whence he can reasonably suppose there are no micro-organisms left. I am sure that instrumentation alone, in the majority of cases, would be quite sufficient, especially if followed up by an occlusion with thorough canal dressing. I myself certainly use a perchloride of mercury solution of one per cent. in water, and instead of putting in a few drops I thoroughly syringe out several times; with the rubber-dam it is thoroughly safe.

Mr. W. H. Coffin: I really do not know what is the best thing to fill the root of a tooth with. I have tried everything. Oxide of zinc with glycerine containing one per cent. of arsenic, I find extremely good. When one has alveolar abscess to deal with, I know of nothing better than peroxide of hydrogen. Kingzett's preparation is very satisfactory, consisting of perchloride of mercury with peroxide of hydrogen, thus combining a germicide with a powerful oxidizer and deodorant.

Mr. R. H. Woodhouse, in reply, said: I think that to a great extent the remarks of many members have answered one another. With regard to what Mr. Bennett said about the oxide of zinc and oil of cloves, I still stick to it that carbolic acid is better than oil of cloves. If the nerve is exposed, the oil of cloves is useful; but if otherwise, the carbolic acid is far preferable, and has the advantage of obtunding the pain. Very few members have spoken of the iodide of mercury, the preparation to which I wished to draw attention this evening; it is one which has attracted a good deal of attention in general medicine. Dr. Mitchell spoke of introducing hot air into the cavity, but I believe no temperature under 250° is of any use for the purpose of sterilizing. Mr. Hern spoke of the advisability of opening up canals; of course we agree as to that, but perchloride of mercury will get anywhere. Mr. Browne Mason spoke of the taste of dry dressing after filling; the only thing which suggests itself to me is that the taste might have come under the filling. Mr. Barrett spoke of failure in treating teeth; well, there is no doubt there are cases which seem almost impossible to cure by root treatment. Mr. Coffin's suggestion of a combination of peroxide of hydrogen and mercury seems a very useful one. I think we have all benefited by the discussion, and will most of us take away with us some useful hints.

Taking Plaster Impressions.—While forcing cup into position, let patient change from upright posture to one bending forward at an angle of forty-five degrees, allowing head to drop on the chest. The annoyance of "choking" will thus be avoided.

FIFTH DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.

(Reported for the British Journal of Dental Science, by J. E. Cummings D.D.S., M.D.S.

The 21st annual meeting of the Fifth District Dental Society of the state of New York, was held in Conservatory Hall, Utica, N. Y. April 9th and 10th. The meeting was called to order at 2.30 p.m. by President B. T. Mason. After the transaction of business, and the report of several of the committees, the President opened the meeting by reading his address. It was as follows:

During the session of 1868 and '69 of the legislature, there was introduced a bill for the establishment of dental societies in each of the judicial districts of this state, and also the state dental society.

This bill became a law April 7, 1868.

This law provided that not less than 15 dentists in regular practice residing within their respective judicial districts might meet at a place designated, on the first Tuesday of June, 1868, and organize a dental society, and that these societies so organized should be bodies corporate and be known as the district dental society of the district wherein organized. And in accordance with this law this society first saw the light in the then village of Rome at the Stanwix Hall hotel, by the election of officers as provided, and the adoption of a set of by-laws, rules and regulations. Of its first years of struggle and adversity there are those here to-day, no doubt, who can speak from experience. But of its prosperity some of its recent meetings can speak for themselves. This society has at present a membership of 45—I believe the largest since its organization; and while its treasury is not disturbed by a "surplus," the society is, I believe, and has been for years out of debt. The fifth too has kept its place among those at the front in the important part that the several district societies, aided by the state society, have taken in elevating the profession of dentistry to the position it now occupies, and in placing upon the statute book the state laws regulating its practice. And I believe that to-day we can congratulate ourselves upon having one of the best dental laws yet adopted by any of the states. Notwithstanding all that has been accomplished by the fifth in the past, I believe there still remains a work unfinished as yet; and that is in bringing before the dentists in our district who are not members of this society, the need of belonging to a dental society, and to see if a renewed interest can not be created among them, whereby they may be induced to join us. To this end I would suggest appointment of committees in each county to correspond with such dentists with this end in view. I feel that the society did itself proud at its last semi-annual meeting at Syracuse. Never before was such a meeting held in the state by any of the district societies outside of New York city, and I wish to congratulate all who in any way contributed to its success. In conclusion, let me say I hope and trust that our society will continue in its prosperity, and that this present meeting and all future ones will be as interesting and profitable as those of the past.

Through the absence of the first essayist, Dr. G. H. Butler, and his paper on "Treatment of Pulpless Teeth," the discussion on this subject was opened by Dr. A. Retter, who stated he was now using hot air in the treatment of all cases of pulpless teeth. After he has opened into the tooth, if he finds no discharge of pus, he applies the rubber dam and by the aid of the hot air pump begins the work of disinfecting the canal and tooth. This air receiver, which causes a pressure of from 25 to 40 lbs. per square inch, is sure to drive out all pus should there chance to be a fistulous opening upon the gum.

He further stated that after thoroughly using this hot air, cases can be finished by filling immediately, but in the majority of cases he would prefer waiting, as there is no hurry.

Dr. J. C. Curtis said: I have a molar in my own mouth which was a very bad one, the lingual root especially. Dr. Retter treated this tooth for me, by filling the roots with carbonate of soda, and sealed it up. In the course of a few weeks, it was opened by Dr. Palmer and found in a perfectly healthy condition. It was filled and has remained quiet ever since, receiving only the one treatment.

The next case was a bicuspid. This was opened by Dr. G. L. Curtis, and filled with iodoform. I then went home; the tooth became very sore and I suffered more than I could stand of toothache, and was obliged to have it extracted. I have never but three times had trouble where I have used carbonate of soda. I drive off the water of crystallization, and work it up into the canal or cavity. It forms a sort of soft soap, and washes, as it were, the parts which it comes in contact with. For a few months, I have been using a splint of hickory moistened with pure wood creosote with which I treat canals. I find it does not bother as much as cotton to work into the canals, and also does not decompose as quickly ; I do not have the splinter thick, but quite delicate so as to follow the canals easily, and if small it will not expand enough to cause any trouble in removing. I allow it to remain in a few days before sealing up. The splints work very nicely in carrying the medicine to the very apex, and beyond if necessary.

Dr. S. E. Mc. Dougall : There seems to be some difference of opinion about forcing medicine through the apex.

Dr. J. C. Curtis : If there should be a fistulous opening upon the gum I force through, if no opening I do not.

Dr. A. Retter : Those roots were large I treated for Dr. Curtis, but generally they are too small for medicine, but air forces the pus through and empties the sac, either by the natural, or artificial opening upon the gum. I do not drill out small nerve canals as there is great danger of broken drills. Ten drops of iodide of potassium is often of great help in treating cases.

Dr. G. L. Curtis : This is a very interesting subject to all of us. I opened Dr. J. C. Curtis's tooth and packed it with iodoform directing him to return the next day for futher treatment, but he failed to make his appearance, thus the result. I also use this hot air, and fill immediately. Where the apex is open I put in medicine overnight.

Dr. Retter : This hot air I find also bleaches a discoloured tooth

Dr. G. L. Curtis : Does Dr. Retter ever produce a fistulous opening upon the gum with pus forced through by this air treatment ?

Dr. Retter : I open upon the gum.

Dr. J. C. Curtis cited a case of a lateral incisor, which came under his treatment, that had evidently an elbow in the root into the process. The tooth was opened and treated, and would seem to gain only to drop back in a few days. When he came to fill permanently it seemed impossible to close it and heal the discharge. Dr. Curtis also read a letter from Dr. Flagg of Philadelphia, who speaks very highly of camphophenique as a typical dental medicine, as a local anæsthetic, or injection for abscessed teeth, etc.

Dr. G. L. Curtis : If Dr. Curtis (J.C.) would fill to end of root as far as he has gone with gutta percha and then cut through the gum he would probably find diseased bone. He could then smooth the end of the root. Where there is pus there is death of surrounding tissue. Remove dead bone and wash out sac to stimulate healthy granulation.

Dr. Retter : The idea of operating from the outside (on the gum) is probably the best to treat fistula after the root canal has been filled, providing you can in every case be successful in opening into the sac.

Dr. A. N. Priest : This subject is one in which men greatly differ in their plans of treatment. One may succeed where another fails. Dentists of the old school cured a great many abscesses with nothing more than pure wood creosote, and in one case I was successful in using nothing but glycerine. A great deal depends upon the health of our patient and in some cases we are at a loss to know what is best.

Dr. E. L. Swartout : I am another of the old style dentists, that is, I commenced dentistry in its early day, and we used mostly wood creosote and then packed the nerve canal with gold. In most cases we were troubled with more or less inflammation which would subside in a few days. I am now practising the immediate treatment, using peroxide of hydrogen, bichloride of mercury and eucalyptus. Should there be any after trouble I drill and treat at the apex.

Dr. H. P. Chambers : I wish to say only a word. I like iodoform, and it works like a charm.

Dr. R. T. Jones : I use iodoform and fill roots solid with the same. When I cannot find the buccal roots I do not try to drill up very far to fill. I use a preparation of iodoform, oxide of zinc and enough oil of cloves to make a paste.

Dr. A. N. Priest : I fill soon after treatment always using gutta percha points. I measure all roots by putting a small piece of rubber dam on a small broach. I consider common sense an essential ingredient.

Dr. A. Retter : There is another plan of using iodoform for root filling, in combination with alcohol and shellac. Mix quite thick (shellac) and in this way the alcohol evaporates leaving a leatherly material which is thoroughly incorporated with the iodoform, and thus preserves the parts from further disease. See that the canals are perfectly dry, that the mixture may soak better into the tooth substance.

Evening Session called at 8.15.

The secretary read a letter from the Massachusetts Dental Society inviting this society to send delegates to their semi-annual meeting June 5th, 6th, and 7th, 1889.

The invitation was accepted.

Dr. S. B. Palmer gave a very instructive talk on regulating the oval teeth, either to rotate the tooth, to push in, or out as the case may be. The Dr. does not think the plan of piano wire is always a success, as it is liable to became loose and displaced and more annoying than a flat spring. He uses a narrow band, around the tooth to be rotated, with a flat eye of very soft gold that can be burnished down, and for the spring, uses old plate gold which has a spring nature. By this plan a tooth can be rotated with very little trouble and seldom necessary for patient to take the chair and, with hardly any soreness. If the teeth are too close together it is best to wedge. The gold spring is better, as it can be bent upon itself short enough, while piano wire cannot. He finds it a good plan in most cases to bring out a little more than required—here he exhibited some interesting cases of regulating, with fixtures that had been used to do the work. One case was the moving out of a lateral incisor—remove fixture and hold teeth in place by plate from four months to one year. If you wish to use piano wire in a vulcanite plate, it will work better if it is dropped first into sulphuric acid then plated with tin, than it would on a surface of steel. The Drs' models and fixtures should be seen to be appreciated.

Dr. J. C. Curtis: Have you removed the cause by bringing out the lateral incisor? How about the stability?

Dr. S. B. Palmer: No, the cause has not been removed, but I allow the fixture to remain on from one to three years.

Dr. J. C. Curtis: How do you find the enamel? Any abrasion?

Dr. Palmer: None, as the band is narrow and self cleansing. Dr. C. E. Barnes: I think in some cases we keep the bands on too long and thus do harm.

Dr. R. T. Jones spoke of case in moving cuspid forward and exhibited casts. Subject passed.

(Paper on Dental Chemistry will appear next issue.)

Dental News.

LEGAL INTELLIGENCE.

Illegally Practising as a Dental Surgeon.

Mr. Arthur Leopold Jackson, of 4, Aked's-road, Halifax, appeared on an adjourned summons charging him that, not being a legally qualified medical practitioner, and not being registered under the Dental Act, 1878, he did take and use the title of surgeon dentist, implying that he was registered under the said Act. The information was laid by Mr. Wm. Willis, L.D.S.I., Ward's-end, and was supported by Mr. Walter Beverley, barrister, Bradford (instructed by Mr. C. T. Rhodes), Mr. Waugh, barrister, Bradford (instructed by Mr. J. R. Farrar) defending. Mr. Beverley explained at the outset that the defendant had been apprenticed to complainant, and that a premature severance had taken place. He said he did so in order that he might anticipate any suggestion that the proceedings were dictated by any unworthy motive, the fact being that the complainant was acting in concert with the dental surgeons of the district and that the summons was taken out with the full concurrence and approval of the British Dental Association. The issue involved was really very simple. Defendant was apprenticed to complainant in March, 1886, and all went well until November, 1888, when he began to absent himself. Eventually it was ascertained that he had set up a dental laboratory and had begun to practise on his own behalf. The allegation was that he had described himself in a way that was calculated to lead the public to believe he was a legally qualified and registered dentist. The fact that he had used words that would have the effect of so misleading the public was alone sufficient to constitute an offence against the 3rd section of the Dental Act. It would be proved that he had done that by means of a brass plate and a coloured lamp at the front of his house, and by circulars, &c. The brass sign contained defendant's own name in good-sized letters, and then, in much smaller letters, there appeared the words, "late with Mr. Willis," the description "Dental surgeon" following in a separate and very bold line, and being succeeded by the announcement "nitrous oxide gas administered daily." Anybody passing hurriedly and reading the sign must have concluded that Mr. Jackson was a dental surgeon. It might be said the words dental surgeon were intended to be applied to Mr. Willis, but they were clearly there for Mr. Jackson's own benefit. The Dental Act was passed, first to protect an honourable profession, and secondly and more importantly to protect the public. Dentistry, as practised now, was really a very high art indeed, and, in order to get into the profession, men had to undergo a certain course of study and were compelled to obtain a diploma and to be registered under the Act of Parliament. If a man held himself out to the public, either expressly or impledily, by word or deed, by sign or in any way whatever, to be a dentist in the above sense, he brought himself within the scope of the Act. That was what the defendant had done in various ways. Correspondence had passed between the parties, but defendant persisted in his error. There was therefore no excuse for him. This was a case of premeditated intention to evade the statute. Defendant, who was only 21 or 22 years of age, had deliberately done this to the injury, not only of the complainant, whose name had been freely used, but of the profession in the district and of the public. When gas was used in dentistry, it was quite a common thing to have a medical man in attendance for safety ; but here was a young and unqualified man practising illegally with full knowledge of the circumstances, to the manifest disadvantage of the public. There did not appear to be a single extenuating circumstance, and he (Mr. Beverley) asked that a substantial penalty might be inflicted, seeing that defendant had clearly not acted in ignorance. He had practically admitted his offence, for he had taken in the lamp complained of. ,

Messrs Willis (the complainant), Arthur Wolfenden dental surgeon, Arthur Cocker, dental surgeon, all of Halifax, confirmed what had been said as to the appearances outside defendant's house ; Albert Warhurst, clerk to Mr. Rhodes, produced a sketch of the *locus in quo* which he had himself made ; Mr. Fred Rownsley, photographer, produced a photograph of the place, recently taken ; Mr. Benjamin Rowland Motley, brass finisher, Sowerby Bridge, who went to defendant's house at complainant's request and had his teeth "scaled," gave a description of the interior of the premises to show that they were of a professional character, and put in a receipt which he obtained for the fee he paid ; and a copy of a circular said to have been issued by defendant was also tendered in evidence.

Mr. Waugh objected to the latter, but was overruled, whereupon he asked that a note might be made so that he might take a case upon the point if necessary. Evidence having been taken at considerable length, Mr. Waugh further submitted that the offence with which his client was charged had not been proved, inasmuch as it had not been shown that his client was not a medical man. After some argument that also was set aside, and Mr. Waugh proceeded with his defence. He insisted that the object of the Act in question was not to prevent any person from acting as a dentist, but to prevent any from holding himself out as a qualified man when he was not, and to prevent unqualified men from recovering fees. Those were the only disabilities it put upon men who were not registered. The doing of the work did not constitute an offence ; the offence consisted in the use of certain words or letters. He (Mr. Waugh) would not stop to comment upon the means employed with the view of securing a conviction. nor would he dwell upon the malice which he said was at the bottom of it all. What he had to say was that there had been no intentional offence. The fact was that on the plate, &c., the words dental surgeon as well as Mr. Willis's name were in brackets, the description being intended to apply to the person with whom defendant had served and not to the defendant himself. The same explanation might be given of the receipt obtained by Mr. Motley, and it might be added that, as soon as defendant found the form was objected to, he altered it. It had been suggested that defendant ought not to have used nitrous oxide gas. There was no Act of Parliament forbidding any man to administer nitrous oxide gas ; if it were administered unskillfully, the person who was responsible would have to suffer, whether he was a properly qualified dentist or not. Defendant's mouth was closed by law ; he could not be put into the box and sworn, but he entirely denied that he had knowingly and wilfully offended as alleged by the complainant.

The Magistrates retired for a few moments to consider their decision, and on their return, the Chairman said they believed the complainant had made out his case, and the defendant would have to pay a penalty of £5 and 6s. 6d. costs, the alternative being distress or one month's imprisonment.—Mr. Waugh applied for a case upon the points he had raised, and asked that the document that had been put in might remain in the custody of the clerk (Mr. Robertshaw).—That was agreed to.

MISSOURI DENTAL COLLEGE.

The twenty-third annual commencement of the Missouri Dental College of St. Louis, was held at the Memorial Hall on the evening of March 14th. Professor Henry H. Midd, Dean, conferring the degree of Doctor of Dental Surgery upon the following gentlemen :

Henry Allen Bragg, Jefferson City, Mo ; Jonathan Otis Eppright, Centerview, Mo ; John Thomas Fry, Moberly, Mo ; Charles Leroy Hickman, St. Louis, Mo ; Philip Frank Hellmuth, Highland, Ill ; William Worwick Holmes, Mount Carmil, Ill ; Harry Taylor Hyams, Port Allen, La ; Gilbert Wesley Jarvis, Moberly, Mo ; De Courcy Bradley Lindsley, M.D., St. Louis, Mo ; Eugene Beauharnias Neal, Bethany, Mo ; Alexander Stark Oliver, Butte City, Montana ; George Harry Pipino, M.D., Quincy, Ill ; Julius Peter Ruge, M.D., St. Louis, Mo ; Henry Ruutz, Basel, Switzerland ; Edward August Ferdinand Wulze, St. Louis, Mo ; Frederick Edward Weber, Basel, Switzerland ; Joseph Henry Wilson, Hannibal, Mo ; Adrien Zinsstag, Basel, Switzerland.

The Honorary Degree was conferred upon Charles Rudolph Edward Roch, of Chicago, Ill.

Prizes were awarded by Professor W. H. Eames, as follows : The St. Louis Dental Society Prize, a gold medal, to Adrien Zinsstag, D.D.S. The S.S. White Dental Manufacturing Co's. prize, a set of Varney Pluggers to John Thomas Fry, D.D.S. ; and the St. Louis Dental Manufacturing Co's. prize, a Dental Lathe, to Henry Rutz, D.D.S.

A. H. FULLEN, M.D., *Sec.*
Mo. Dental College.

OPENING OF EDINBURGH DENTAL HOSPITAL AND SCHOOL.

The inauguration of the New Dental Hospital and School in Lauriston Lane, Edinburgh, which has been constructed at a cost of £450, took place on Saturday, May 4th. In close proximity to the Royal Infirmary, the hospital is advantageously situated for students who may be desirous of sharing in the practical instruction of both institutions, while even a more important element in its situation is the fact that its position is convenient for patients. On the ground floor, and almost opposite the main door, there is a retiring room for students, with lavatory adjoining. The patients' waiting-room is immediately at the entrance to the large hall, or what is known as the stopping department. This hall is 50 feet long, and 25 feet broad, and is excellently lighted from the roof and sides. At present there are 20 chairs, but there is accommodation for 50, and these will be gradually provided as the number of students increases. The operating arrangements here are of the most improved and modern kind. Saliva ejectors and burring engines are provided, worked by water power. The heating of the hall as well as of the other rooms, is arranged in the form of hot-water pipes laid from the furnace room at the south end of the building. The first floor contains the extracting room, anæsthetic room for the administration of gas, and impression room. In the next floor there is the board-room, in which are a museum containing pathological and anatomical representations, and a library. A mechanical laboratory has also been fitted up in an apartment adjoining the board-room. In the hospital there is ample accommodation for about sixty students, and this limit is expected to be reached in a few years. Altogether it may be said a training school of its kind has been furnished equal if not superior to any in Great Britain. The directors, in order to establish a thorough training school, intend to have attached to it articled pupils, who will pass their professional years' instruction within the school, receiving their mechanical tuition as well as their medical instruction with the class. The inaugural ceremony was held in the large hall, and there were present :— Sir Douglas Maclagan, Dr. John Smith, Dr. Littlejohn, Mr. W. Bowman Macleod, Mr. G. W. Watson, Mr. L. Mackersy, Mr. Trainer, &c. Sir Douglas Maclagan, in declaring the hospital open, said he was quite certain no establishment could be fitted up better for the purpose than that in which they were then assembled. He congratulated the people of Edinburgh, of Scotland, in fact, and his brother managers of the Infirmary in having such an admirable appendage to the larger institution. He hoped the inauguration would be an omen of prosperity and light to the subject of dentistry here.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

40, Leicester Square, W.C.

The next Meeting of the above, will be held on Monday June 3rd, at 8 p.m.

Paper by Dr. Ferrier, F.R.S. " On some of the relations of the fifth nerve."

Casual Communications by W. Scott Thomson. " On a Case of Irregularity " by Messrs. J. Robinson, & G. Cunningham.

" On the occurrence of crystal forming bacteria in the mouth."

E. G. Betts, *Hon. Sec.*

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

At the April sittings of the Examiners the following gentlemen were admitted Licentiates in Dental Surgery :

Luther Watson, L.R.C.P. & S., Edin., and L.F.P.S. Glasg., Burnley, Lanc. ; James Stewart, Glasgow ; Harry Austin Armitage, Manchester ; Samuel L. Elmitt, Newcastle-under-Lyme.

The following passed the first Dental Examination :—

Alfred B. Stoner, Brighton ; William Geekie, Oxford ; Horace H. Elliott, London.

APPOINTMENTS.

Dr. F. W. Cock and Dr. J. F. Silk have been appointed anæsthetists to the Dental Department of Guy's Hospital.

Mr. W. A. Maggs L.R.C.P., M.R.C.S., L.D.S., has been appointed senior assistant Dental Surgeon to the Dental Department of Guy's Hospital.

Messrs. I. Mansbridge L.D.S., H. Murray L.D.S., H. L. Pillin L.D.S., G. O. Richards L.R.C.P. M.R.C.S. L.D.S., R. Wynne Rouw L.R.C.P., M.R.C.S., L.D.S., have been appointed assistant Dental Surgeons to the Dental Department of Guy's Hospital.

VACANCIES.

National Dental Hospital, 149, Great Portland Street, W. —The post of Lecturer on Histology is vacant. Applications to be made to the Secretary.

National Dental Hospital, 149, Great Portland Street, W. —The post of Anæsthetist is vacant. Applications to the Secretary.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

PHILLIPS *v.* COTTAM.

To the Editor of the "British Journal of Dental Science."

Sir,—While thanking you for your remarks on the above case, I think it just right to inform you, the plaintiff I am confident is mistaken in saying she spoke to me about the bleeding after the extraction, which was an easy one, or that I said the gum would come right by-and-bye, and that the bleeding would get better. I am positive no such conversation took place and my brother who was in an adjoining room at the time is able to corroborate what I write. Dr. Cartwright when he called upon her asked if she made any complaint to me, and she replied she did not, it seemed however to suit her convenience not to remember what she told Dr. Cartwright, although it occurred nearly three months after the extraction. Of course had I been placed in the witness box I would have denied the plaintiff's statement. It ought to stand to reason that with every means at hand and plenty of experience, I should not have declined to stop the hœmorrhage; the fact is it had stopped, or nearly so when she left our house, certainly I was under the impression it had ceased. According to her evidence she was working for three hours after, so the hœmorrhage could not have been as great as she asserted.

Yours obedient servant,
THOS. E. COTTAM.

British Journal of Dental Science.

No. 513. LONDON, JUNE 1st, 1889. Vol. XXXII.

A SURGEON'S NOTES ON CERTAIN DISEASES AND MALFORMATIONS OF THE TEETH.

By Jonathan Hutchinson, F.R.S., L.L.D.,
Consulting Surgeon to the London Hospital.

Concluded from page 419.

If I turn now to the subject of stomatitic, or mercurial teeth, I am quite aware that I am entering upon a subject concerning which the propositions I ventured to make some years ago have not by any means met with general acceptance. Those propositions were to the effect that, in cases in which great and general damage to the enamel of the permanent set of teeth is observed, it ought to lead us to suspect that the patient has in early infancy passed through an attack of stomatitis, attended with inflammation of the tooth sacs. Subsequent experience has confirmed me in this opinion, and I feel more and more confident, as facts have increased in number, that by far the most important cause of defects in enamel development in the permanent set of teeth is the use during infancy of mercury in one or other form. I by no means assert, and never did assert, that mercury is the only cause of the stomatitis which produces what I venture to call stomatitic teeth, but that it is by far the principal one. A knowledge of this fact has led me of late years to be far more careful than formerly as to the use of mercury in infancy. The test teeth for mercury are the first molars of the second set. Their condition should be contrasted with that of the two premolars. If all the eight latter have good white enamel while all the four former show absence of enamel and spinous discoloured surfaces, then I believe we may with confidence assume that the child took mercury in infancy, or that some cause for a similar kind of stomatitis then existed. Of the concurrence of these teeth with lamellar cataract, a fact to which attention was drawn many years ago, I have had during the last few years some very remarkable cases in proof. Whilst admitting that it is to some extent still an open question whether there is any correlation of development between the eyes and teeth, I still hold to the belief that the connection between the two phenomena referred to is not to be so explained, but that the lamellar cataracts are due to convulsions in infancy, and the damage to the enamel of the teeth is due to stomatitis caused by mercury given for the convulsions.

Of late years I have been in the habit of using what I have called "mercurial teeth" as an assistance in reference to treatment in adult life. If a patient presents himself, we will say for syphilis, whose teeth show the mercurial malformations, I observe the greatest possible care in the administration of the drug in question. My attention was first drawn to this point by the occurrence of very profuse ptyalism from very small doses of mercury, in a patient in whom I noticed afterwards that his teeth were most definitely of the mercurial stamp. It occurred to me at once as possible that he had an idiosyncrasy involving unusual susceptibility to the drug, and that it was owing to this idiosyncrasy that his teeth had suffered from what was given in infancy. If this view be correct, mercurial teeth may rank as revealing symptoms, and may be of value as giving us information as to individual susceptibilities which we could not have otherwise recognized.

The son of my friend Dr. R. offers a very good instance of mercurial teeth in association with lamellar cataract, and as his father is a medical man we have exceptionally good opportunity of obtaining the facts as to his infancy. The condition of lamellar cataract in both eyes is very marked, the opacity being very dense and the obstruction to vision such as to make operation desirable. It has been decided to use the needle. He is a clever sharp lad, and does not suffer much from headache or other inconveniences. The history is that in infancy he had laryngismus stridulus, and also a long succession of severe convulsions, and that for both of these affections he took much mercury. The result has been that his four first molars all show their crowns denuded of enamel and black from discoloration ; whilst his eight bicuspids are all perfectly formed and well covered with white enamel. His incisors and canines all show the enamel more or less defective, and their surfaces discoloured. At first sight I thought that there was an exception to the rule, and that one of the bicuspids was carious, but on more careful inspection I found that the carious tooth was really a temporary molar, and that a well-capped bicuspid was just coming up by its side.

The whole subject of the *correlation of the defects of the teeth with those of other organs* and parts is one worthy of careful study, and it is one with regard to which as yet but little has been done. My friend, Mr. Moon, has published in the Transactions of this Society two series of cases in which rat-like teeth--that is, teeth pointed by suppression of the lateral denticles—were present in several members of the same family, and in association with other defects. These defects were microphthalmos and deficient formation of hair. Mr. Moon's observations concerned the second set of teeth.

I have myself published in the Medico-Chirurgical Transactions, some years ago, a very remarkable case in which a male child was born almost hairless, and with great defect in the development of his skin. In particular his mammary glands were absent. There was no obvious defect in his eyes, and his teeth, which were his first set, were only peculiar in being small and not placed straight. He had no microphthalmos. We may take his case in proof that extreme defects in the formation of the skin and its appendages are not necessarily attended by defects in the development of the teeth. This fact has been further illlustrated by one observed by my son, Proctor S. Hutchinson, in which a puppy born almost hairless showed no defect in its milk teeth. It would be of much interest in connection with this subject, if surgeons engaged in ophthalmic practice, and others who may have opportunities, would in all cases of microphthalmos make careful note as to the state of the teeth. We want particulars in these cases both of the first and the second sets. Conversely, if those engaged in dental practice would in all cases of "rat-teeth," or other remarkable defects of development, keep note of the state of the eyes, hair, and nails, we should get a class of facts which might help us to avoid error, and possibly give an insight into the new laws as to correlation.

I have to repeat, what I have said formerly as to the dentition of those that are rickety, I do not believe that the subjects of rickets as a rule show any definite peculiarities in the development of their permanent teeth. I have carefully availed myself of all opportunities for observation, and feel sure that the term "rickety teeth" is used, when it is used, without any definite meaning.

It is perhaps time that something more should be attempted with a view to arrive at knowledge as to the significance of the tooth structure as an index of that of the other tissues of the body. If the teeth wear well or badly, are we justified in either case in assuming anything as to the longevity and capacity for wear of other tissues? In any investigations on these points we must carefully discriminate as to the different forms of tooth disease. It is not sufficient to state the mere loss of teeth, we must know from what cause they were lost. The facts as to Riggs' disease, if I have got a correct impression respecting them, show that the teeth may be lost without there being any inherent defect in their structure. In this affection the teeth as yet sound fall out from inflammation of their sockets. Such cases are wholly different from those in which the teeth suffer from premature caries, or, as the patients calls it, "crumble away." In this latter group of cases it is very improbable that the teeth are the only tissues in the body which have been badly developed, and, did we fully understand the bearing of the condition, it might help us materially to a recognition of the patient's state of health and life prospects.

Not only ought we, I may suggest, to try to learn all we can as to the vital significance of early decay of teeth, but we may perhaps make some use of their tendency or otherwise to accumulate tartar. This tendency unquestionably runs in families. I have observed it in a very marked degree in members of three generations, and have seen it under conditions which would imply that it had very little to do with neglect of attention to the toothbrush. Some persons indeed, who are able to prevent the collection of tartar on the outer surfaces, are quite unable to do so as regards the inner surfaces of the incisors. I have little doubt that excessive tendency to tartar is in many instances a proof of habitually excessive flow of saliva, and I believe further that it often occurs in those who have a tendency to gout.

It is not often that I trespass on the domain of the dental profession in respect to the scaling of teeth. I was, however, consulted the other day by a lady who believed she had a bone growing in her mouth, and for whom I had to remove, not without some force, the fragment which I now exhibit. I may own that at the first glance I was puzzled as to what it was, for it was quite smooth and polished, and looked in the mouth twice the size that it does out. She was a maiden lady of most particular habits, and it will be seen that the accretion is grooved by the use of the toothbrush. There was gout in the family.

As regards *observations on the milk teeth*, I suppose it may be taken for granted that they will usually display the results of disturbances of the health of the fœtus during intra-uterine life rather than of anything which has occurred after birth. Thus they usually escape malformation in inherited syphilis, though very likely to suffer from caries, and to fall out early. It would be of much interest if those engaged in family practice would, in all cases in which pregnant women suffer from severe illness, and more particularly when they have to take a course of mercury, note the state of the infant's first dentition.

I will now, with your permission, pass to another subject, and one which I do not feel sure that I am in good taste to mention at all in the present meeting.

I have recently seen two cases in which at the age of fifty the whole set of thirty-two teeth were in perfect condition. This is no doubt very exceptional, and it may be worth a few lines to record the conditions as regards inheritance, &c., which attended it.

In one case my patient was a single man born in Cornwall, but bred up from childhoood in a wild district of the United States, where he suffered from "dumb ague." For this he took calomel and quinine, and of recent years he has taken much mercury for syphilis. In spite of this, however, he has never in his life had toothache, he has not a single spot of caries, and his teeth are all beautifully white and in perfect order. He is a man of very precise habits, and has for long been accustomed to clean the teeth three times a day, using a rather soft brush and some powdered chalk which he scrapes for himself. Once or twice a year he carefully scales the lower incisors behind free of tartar. He is a spare man, of sound health and temperate habits. His parents lived to be old, but his mother had been thought to be consumptive. He believes that his father had excellent teeth, but his mother not so ; one or two of his brothers and sisters had very good teeth, but one brother had suffered much from toothache. There is no history of gout in the family, and no peculiarities as to diet are to be noted.

In my second case the gentleman was decidedly gouty, and I quoted to him the proverb, "You have got a fine set of teeth, mind you don't dig your grave with them." He was fifty-four years of age, and his set of teeth were absolutely perfect; none had been lost, and none showed any tendency to decay. With the exception that he had suffered several times from gout, and from gouty dyspepsia, he had enjoyed good health. I did not get any facts as to hereditary history. His teeth were clean and white, and had evidently been taken good care of.

The only explanation of the proverb I have mentioned that I know of is that those who have good teeth are prone to be large eaters, and may in this way be likely to develop indigestion, gout, and other maladies due to the over-supply of food. Some of my medical friends are, I know, in the habit of speaking of "gouty teeth." With the exception that I think we not very infrequently find, in association with the general vigour of constitution and soundness of tissues which members of gouty families often exhibit, a more than usually good preservation of the teeth, I do not know of any peculiarities which denote gout. Those who preserve their teeth well often show, simply as a consequence of their long use a remarkable degree of wearing down. In some instances this wearing down may be due to the habit of grinding the teeth, and Dr. Graves has taught us that a remarkable tendency to teeth-grinding is usually indicative of gout. He records some remarkable instances in which gouty patients suffered extremely from tooth-grinding, the teeth being worn level with the gums, and the habit becoming so incessant that the patients were obliged to avoid all society. I am not aware that any of the more recent writers on gout have recorded any similar cases. No example of persistent tendency to tooth-grinding in a gouty patient has ever fallen under my notice.

The liability to the wearing of teeth by friction, whether in mastication or otherwise, evidently differs very much in different persons. In the first of the two cases which I have just described, the man was in the habit of brushing his teeth three times a day, yet not the slightest evidence of wearing from the brush was present. I have seen mouths in which a furrow produced by the toothbrush crossed the neck of the incisor teeth so deeply as almost to cut them in two. The worst that I ever saw of this kind was in the person of a dentist, who assured me that such toothbrush furrows were not by any means uncommon. The pipe notch caused by smoking, although not unfrequently seen, is yet sufficiently rare to make it evident that its production depends to a large extent on some individual peculiarity in the construction of the teeth.

INTERNATIONAL DENTAL CONGRESS.

By George Cunningham, M.A., Cantab., D.M.D., Harvard, L.D.S. Eng.

One of the characteristic features of the International Exhibition of 1889 will undoubtedly be the large number of International Congresses which will be held during the next few months. Already announcements have been made on behalf of nearly 70 such organisations devoted to art, science, medicine, surgery, hygiene, but more usually to some special branch of these subjects ; and all of which take place under the sanction and with the support of the French Government.

For a variety of reasons, the fact that a Dental Congress included among these organisations requires some little explanation, and some members of the "Commission d'organisation" have requested the present writer to explain their position to their professional brethren in this country. The proposal to hold this Congress originated with l'Association Generale des Dentistes de France, by sending Mons. Paul Dubois, the editor of their Journal "L'Odontologie," to bring the matter before the Dental Section of the International Medical Congress at Washington. It is evident therefore that our French confrères could have been inspired by no spirit of animosity to their Eastern neighbours, since at the time, when their decision was made, it was impossible to foresee where the next Congress would be held, whether at Berlin or elsewhere. Like many other of our professional brethren, when our opinion was asked as to the advisability of holding a separate Dental Congress, we felt that we were only expressing the general feeling of the profession in this country by deprecating the institution of any separate Congress as likely to weaken, at any rate, to some extent, the Dental Section of the International Medical Congress. It is, however, obvious that without the International Exhibition, this International Dental Congress would not have been possible, and it must be admitted that the circumstances are exceptional.

Undismayed by a considerable non-approval of the scheme abroad, and actuated no doubt by a laudable desire to appropriate at least some little part of the patriotism and fervour arising from the celebration of the centenary of an event itself unique in the world's history, a joint committee was formed representing the following bodies:—L'Association Gènèrale des Dentistes de France, and La Société d'Ontologie de Paris on the one hand, and L'Institut Odontotechnique de France, and La Société Odontologique de France on the other. This joint Committee decided that an International Dental Congress should be held, and nominated a Committee of organisation to carry out the project and especially to invite the aid and assistance of foreign dental practitioners and dental societies abroad.

The following may be regarded as the essential features of the coming arrangements:—

The Congress is under the patronage of the Government, which has undertaken to defray certain expenses of publication.

The Congress will be held from the 1st to 7th September, and no dues will be exacted from foreign visitors.

The Congress will be divided into several sections as follows:—

I. Anatomy and Physiology (normal and pathological.)

II. Operative Dentistry (including also dental therapeutics and Materia Medica).

III. Mechanical Dentistry (including the treatment of irregularities.)

IV. Dental Education and Instruction. Communications may be made in French, English, German, Italian, or Spanish. In order to enable the majority of Congressists to be acquainted with the conclusions arrived at in the papers, the Committee undertake to translate into French the conclusions, or an abstract of papers written in foreign languages, if the manuscripts are sent before July 1st, on the condition that the abstract will not exceed six pages of printed matter.

In order to facilitate and concentrate discussion the following questions have been adopted, and though communications on any branch of the Science and Art of Dentistry will be welcome, the members are specially invited to make known their views on those questions with which they are most familiar, and on which they have made original research.

Under Section I.

(1) Race characteristics of teeth.
(2) The rôle of micro-organisms in dental and oral pathogenesis.
(3) The influence of nutrition upon the production and, on the cure of dental caries.
(4) Dental and oral classification and terminology.

Under Section II.

(1) The treatment of teeth with diseased and those with dead pulps.
(2) The comparative value of gold and plastic filling materials for the obturation of teeth, with an account of recent improvements in filling materials.
(3) Local anæsthesia.

Under Section III.

(1) Indications for and methods of artificial crowns and bridge work.
(2) Conditions requisite for executing the regulation of teeth and the alveolar arches, with an account of new methods of regulating.
(3) On the choice of materials for the construction of artificial dentures.
(4) Restoration of the face and of the maxillæ.

Under section IV.

(1) Instruction in Dentistry, methods and duration of study.
(2) Dental and oral hygiene during the periods of dentition.

It is evident that this programme has been laid down on a broad and intelligible basis, and now comes the vital question —What should be the attitude of the profession of this country in the face of a movement which must now be regarded as inevitable, and which, if efficiently carried out and loyally supported, must do much to improve the science and art of dentistry, both in France and abroad. The coming Congress has already received considerable attention in the American and the Continental Dental Journals, hence we are in a position to at once answer some of the contentions which may not unnaturally arise in the minds of some readers. A fear has been expressed that the title "International Congress" might be looked upon by the medical profession as a virtual withdrawal from the International Medical Congress. The late Dr. Brasseur in a letter written only two days before his death deprecated not only any such result but also that such an impression could arise. The term "International" he regarded as eminently fit since it was hoped and expected that dentists, representing all nationalities would be present, and that the same prefix had been adopted by more than sixty art, scientific, and other associations, announced to meet in Paris during the same period. It has also been pointed out with perfect justice by Dr. Kuhn that several other specialties of both medicine and surgery will have separate congresses, the principal organisers of which regularly follow the sessions of the International Medical Congress, citing as an example the Ophthalmologists, though in truth he might have added several others.

Professor Dubois, than whom it would be difficult to find anyone more directly in touch with the feelings and sentiments of the dental profession in France, writes as follows:—"Until now we have had but very infrequent relations with our confréres on your side of the silver streak. The dental movement, of which the Americans and the English have been the promoters, has determined analogous movements in other countries. It has taken in Germany and in France, directions somewhat different from those which you have imparted to it. We cannot ignore what passes in other countries, and more especially in that of our nearest neighbour. With us dentistry has been transformed within these last ten years. The equitable appreciation of that transformation, the exchange of ideas with your continental brethren may be regarded even as a duty you owe our common profession, and you could not but find it to your advantage that England should be largely and worthily represented at the Congress of Paris."

It has also been reported that the movement is not being supported by the best men, but this report is quite unfounded, since the committee embraces the names of the most active and the most prominent leaders and teachers of the day, and is representative of both the leading professional associations and schools.

Apart from the not unimportant considerations that the Exhibition itself is undoubtedly the very finest of the kind ever held, that the time of the Congress is the most comfortable time of the year for visiting Paris,it is surely of no little importance to be able to encourage by one's presence a movement which claims the sympathy of every loyal-hearted, level-headed dentist. For in France, as in most other continental countries, the dental profession is divided into two great and opposing camps, on the one hand the surgeon practising dentistry, and on the other the dentist pure and simple. In this country the battle is happily over, and victory rests where in the best interests of any people it must finally rest, namely, with the latter. In France, the fight has been waged for years with an intensity and under conditions unparalleled in our experience. At first, for years the surgeon successfully withstood all the attacks of their opponents who then lacked any effective organisation, but now each party is represented by its own journal, its own school, and its own association. So thoroughly and so strongly entrenched, each within their own lines, the conflict threatens to become permanent, and adequate legislation rendered thereby impossible.

The institution of this Congress by the representatives of the dentists has compelled those of the surgeons to participate in the general truce which has been offered for the purpose of promoting the Congress, and welcoming their foreign confrères in the name of the whole profession. Loyal and intelligent co-operation of this kind bespeaks the common sense and common patriotism of both parties and must command the respect of their foreign colleagues.

It would surely be a pity for such co-operation to cease with the termination of the Congress, and if our interest, our participation, and our experience can do anything, and I firmly believe it can do much to transform this temporary truce into a long and lasting peace between these rival forces, it should surely be a pleasurable duty to see that our several societies, and that our profession in general, are largely represented at the International Dental Congress.

A Useful Hint.—Replace a loose or lost tooth on rubber plates with copper amalgam, countersink an opening behind the tooth and fill with prepared amalgam, and press the tooth home.

THE VALUE OF OXYGEN AS AN ADJUNCT TO NITROUS OXIDE IN DENTAL WORK.

By J. Fredk. W. Silk, M.D., (Lond.),
Anæsthetist to Guy's Hospital Dental School, and to the Great Northern Central Hospital, &c., &c.

In the columns of the *Lancet* there has recently appeared, (April 27th), an article on "The Anæsthesia produced by the administration of mixtures of Nitrous Oxide and Oxygen.' Being still engaged in completing his observations, Dr Hewitt very properly entitles the communication a "Preliminary Notice," and it is therefore impossible to decide exactly, how far the methods advocated and the results obtained, are really superior to those which have been long known to us, through the labours of Continental and other observers. At the same time, however, the whole subject of Nitrous Oxide anæsthesia, is one which has such special interest for Dentists, that I hardly think any excuse is necessary for drawing attention to the article in question, and for indicating the nature of the criticism, to which any attempt to introduce new methods of anæsthetisation should be subjected.

Before any new method is introduced or advocated, or, at any rate, before it can claim any share of popularity, it must, I think, be shewn that the system it seeks to supplant does not suffice for the work, and it must also be proved, not merely that the new method is equal to, but that it is very decidedly superior to the old.

What then are the drawbacks attendant upon the use of Nitrous Oxide, and how have these objections hitherto been met?

1. The comparatively cumbersome apparatus. Dentists have become so accustomed to the use of the necessary and elaborate instruments, that this question of cumbersomeness is now-a-days hardly ever raised. I think, however, that the objection is a very real one, and in this opinion I am supported by the fact that ever since its first introduction, there has been a strong tendency towards the simplification of apparatus; from the clumsy gasometer to the direct administration from wrought iron bottles; from the latter to smaller and lighter steel ones, etc., etc.: in fact, almost the only practical difference between the methods of to-day and those of 40 years ago, is precisely this tendency to simplification.

2. Some stress has been laid upon the fact that the resulting anæsthesia is associated with what I have termed elsewhere* "Oxygen starvation," with its attendant jactitations, spasms, &c. This objection appears to me to be rather of a theoretical character. Not only have no fatal accidents been distinctly traceable to this source, but even troublesome after-effects are rare, and the anæsthesia produced is, while it lasts, certain and absolute. Nor can I altogether agree, that the inhalation need always be pushed to the production of jactitations, spasms, &c. I certainly think that one should stop short of this point, but in any case I should be guided by the amount of work to be done, and the possibility of the operator being able to do the work in the time.

3. The shortness of the anæsthetic stage, and the practical impossibility of maintaining the inhalation, during the operation (I allude, of course, to Dental work alone.)

This, even when the gas is pushed to its utmost limits, is undoubtedly the most serious of the objections that have been raised to its use. But, short as the time is, it suffices for the extraction of two, three, or even more teeth, and the question naturally arises, is it for the safety, or the comfort of the patient to do more at one sitting? Of course the whole of the teeth may be removed at once if need be, but would it not be wiser to look upon such a proceeding as a strictly "Surgical" operation, and take measures accordingly? The same remark, too, applies, though in lesser degree, to the extraction of large numbers of teeth short of the whole.

For some years past it has been usual to meet this objection of "Shortness of Anæsthesia," by introducing towards the end of the inhalation small quantities of ether vapour, and this plan, if properly carried out is certainly a good one. The period of inhalation is not prolonged beyond that necessary for gas alone. The duration of the anæsthesia may be nearly if not quite doubled, and this prolongation is almost entirely under the control of the anæsthetist. The primary stimulating action of the ether vapour upon the circulation is, too, I believe, of great value in helping the patient to overcome the shock, consequent upon an extensive series of extractions. It has been objected to this use of ether, that recovery is apt to be slow, and associated with hysterical crying and excitement, may be headache and vomiting, or other unpleasant after-effects. To a certain extent, of course, this is true, but I do not think the ether is altogether to be blamed for this ; it is always difficult to determine precisely, how far these troubles may be due to the anæsthetic, and how far to the shock consequent upon the removal of a large number of teeth.

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* "A Manual of Nitrous Oxide Anæthesia," p. 65. J. & A. Churchill.

Is the method of mixed gases superior to that of Nitrous Oxide alone ? and is Oxygen likely to be of service to the Anæsthetist in dental work ?

Taking into consideration the well-known fact, that the admission of a small quantity of air, (which may be looked upon simply as diluted oxygen), materially increases both the time of inhalation, and the quantity of Nitrous Oxide necessary to induce anæsthesia, one can readily understand that the apparatus required for the mixed gases is not likely to be very simple, and one awaits with interest Dr. Hewitt's description of the portable device which he is at present engaged in perfecting. Certainly I should be inclined myself to look upon any method which added to the cost, or the weight, or in any other way complicated, existing apparatus, as a retrograde step, only to be compensated for by very decided advantages in other directions, and I can hardly think that, from a dentist's point of view, such decided advantage is presented by the mere abolition of jactitations, and the conversion of a compound but perfectly satisfactory form of anæsthesia into a more strictly physiological one.

So far, then, it appears to me, that the substitution of the mixed gases for Nitrous Oxide in simple extractions, is neither necessary nor advantageous, and it is only when the element of " time " has to be considered, that the two methods are at all likely to be brought into competition. Practically therefore the subject resolves itself into this : is Oxygen a satisfactory substitute for small quantities of ether vapour in dental work ? It is from this point of view that a dentist should I think consider the matter. So far as our present knowledge goes I do not think that this point has been proved. Dr. Hewitt's observations are as yet incomplete, and his preliminary notice does little more than confirm foreign observers in their views as to the impracticability of the methods advocated ;—his future articles will be awaited with interest.

SYPHILIS: ITS HISTORY AND THE MANNER IN WHICH IT AFFECTS THE MOUTH.*

BY MR. STANLEY READ.

No question in the history of Medicine has been more keenly debated, than the time at which the worst venereal disease, Syphilis, first appeared. The descriptions left to us by the ancients are sufficient to satisfy us, that they were familiar with ulcers and other affections communicated by sexual intercourse. In describing the shameful maladies, they do not distinctly attribute to ulcers of the genital organs the power to produce general bodily disease. Syphilis was first particularly noticed in 1492-5, when it reaped its first harvest in Europe, in the form of a plague. So bad was it then, according to Gibbon's "Decline and Fall of the Roman Empire," that everybody had this horrible disease, from the "beggar on the roadside even to the priests." Pope Leo X. also contracted it in some way or another.

I do not see why Europeans should be supposed to have had the honour, if honour it be, of being the first to originate syphilis, as to all accounts of those ancient *civilised* places, as Babylon, the people were just as disgustingly lewd and filthy as were those in the middle ages, perhaps more so. Great efforts have been made to prove that syphilis is a very ancient disease, mostly by the Frenchmen, Casenave, Follin, and Lancereaux, who have reviewed all the various writings in which a mention of the genital organs occurs.

In the few medical works of antiquity, we must not expect to find a systematic description of this disease because, of course, the ancients did not recognize several of its features. But numerous quotations shew it was a well known fact that certain local diseases were communicated by impure intercourse; they are so clearly described that they appear identical with what we know now to occur in the outset of syphilis. The earliest notice of syphilis hitherto met with in Hindoo literature is in a treatise on medicine entitled the "Agur-vedas." In one chapter on the diseases of the pudenda it records certain contagious affections. ulcers, eruptions on the sole of foot and palm of hand, and many others now known as certain results of this disease, whilst in another part the author writes about buboes, and the sloughing of the penis, etc.

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* A paper read before the Studeuts' Society, Dental Hospital of London.

The ancient Greeks, and the Latins, such as Hippocrates, Celsus, Aetius, and others, mention ulcers in the different parts of the body resembling the modern description of syphilis. In the ancient poems of Martial, Juvenal and others mention is made of these constitutional diseases being communicated by kissing, etc., besides sexual intercourse.

In Chinese literature we may expect some very ancient testimony. The Emperor Ho-Ang-Ti. who reigned over 4500 years ago, caused all the writings of his own and former times to be collected together into one systematic treatise. In this are clear accounts of chancre, phimosis, buboes, ulcers of tonsils, sores round anus, coppery eruptions, or as they are now called, hammy eruptions of the skin and their cure by mercury. Gonorrhea was described by the Emperor Ho-Ang-Ti with that vividness which denotes an acute sufferer. Syphilis is now supposed to be what was called leprosy in the early ages. For leprosy was very common until syphilis broke out, but after that leprosy disappeared and was as rare as it is now.

If, then, leprosy were so common in England, the question naturally presents itself—"Why, is it now so comparatively rare?" The difficulty of replying to this satisfactorily is not diminished by recollecting that the disease, whatever was its real nature, was contagious. Leprosy, we further know, possesses a strong inherent tendency to transmit itself hereditarily, thus rendering it next to impossible to be wholly extirpated or extinguished; nevertheless the Arabic Lepra is a disease so rare as almost to be unknown in Europe, and the Greek Lepra is far from being common. One supposition would solve every difficulty could we admit it, namely, that what was named leprosy in those days proceeded from originally the sores on the genitals spoken of comtemporaneously, which are very similar to those of syphilis.

Lepers according to all accounts were very white skinned; this also points to syphilis, for we all know how anæmic a congenitally syphilitic person may be and usually is.

As a strange coincidence, one of the six lazar-houses or leper asylums of London, namely, the Lock Hospital, is now an asylum for syphilitic persons; maybe it is not a coincidence at all, but simply that the hospital has kept up its old functions by receiving the syphilitic who were formerly styled lepers.

Syphilis is a specific disease resulting from the inoculation of a virus, which multiplies in the whole system till the whole body is infected. It is communicated by the *direct* contact of the blood, secretions, or discharges of a person suffering from the primary or secondary stage of syphilis, with an abraded surface of a healthy individual, and, under certain circumstances it is transmitted from syphilitic parents to their offspring. It is therefore contagious but not infectious. The tongue seems to be a favourite seat for the manifestations of the secondary and tertiary stages of syphilis, the reason of this is supposed to be because this organ is so highly vascular and in constant activity. Syphilis, of all the various diseases that affect the tongue, is most common.

The chief syphilitic affections of the tongue may be classified thus :—

1. Mucous tubercles and vegetations.
2. Superficial ulcerations.
3. Gummy tumours and deep ulcerations.
4. Morbid conditions of the mucous membrane.

Then there may be primary sores on the tongue following inoculation.

I. The mucous tubercles are most generally met with, about the sides and under the surface of the tongue, or on the fold of mucous membrane, which is reflected from the tongue to the floor of the mouth.

II. In the secondary stage, most affected persons have superficial ulcers on the sides, tip, and under surface of tongue, and they are often associated with similar ulcerations inside the cheeks, the lips and about the angles of the mouth. It begins as a small inflamed spot or as a vesicle, and then extends in linear cracks and fissures called Rhagades ; these fissures become extremely painful. When this ulceration heals the texture of the mucous membrane is altered both anatomically and functionally, for cicatrices are formed which are depressed and corrugated or, on the contrary, elevated and shining. In other cases the papillæ adjacent to the scar become hypertrophied ; the epithelium is not shed as it ought to be, and accumulates as milk-white patches ; both sensation and taste are blunted. Sometimes the ulceration is not confined to fissures, but forms a widespread shallow ulcer with well defined overhanging edges and a hardened base.

III. The gummy tumours are generally found in the fibrous raphé, which divides the tongue into two equal parts, and at a varying depth; they consist of cell growths of a low organization.

These tumours may be absorbed or break down, the semifluid material finds its way to the surface and discharges. When the tumour gets absorbed the soft parts of the tongue often sink down and form a depression where it had been, When the tumour has broken down and the fluid discharged, if it is treated as an ordinary abscess it will heal all right; but if not seen to, the place rapidly ulcerates and in a few days may become a deep foul excavation, the lining of which looks very much like soaked wash-leather.

As it is an easy thing to mistake syphilitic ulcers for cancer, I will give a tabulated form for the differential diagnoses of Cancer and Syphilis as they affect the tongue.

CANCER.	SYPHILIS.
Generally over 40	Generally under 40.
Begins at one side, generally at middle or posterior third	Frequently in central line.
Shape circular	Shape oval, or oblong.
Pain acute and darting	Pain slight, or none at all.
Ulceration secondary, *i.e.*, the induration becomes ulcerated	Ulceration primary, *i.e.*, the ulcer becomes indurated.
Tongue tied down and immoveable	Tongue free and moveable.
Speech thick and indistinct	Speech easy and distinct.
Glands soon become enlarged	Glands not affected.
Frequently attended by sloughing	Never sloughs.
Increases steadily; sometimes rapidly	Increases slowly or remains stationary.
No amendment under treatment	Amends under treatment.
Family history of Cancer	Syphilitic history and symptoms.

IV. Now for the fourth manner in which syphilis affects the tongue, by forming morbid alterations of mucous membrane.

The simplest of these is Psoriasis linguæ; here the epithelium over a circumscribed area is slightly increased in quantity and is of a dead white appearance. The papillary structure is obliterated but the patch is traversed by a few delicate markings. After a day or two the accumulated epithelium is shed and a red raw surface is left. If judiciously treated the epithelium may perfectly reform; but if neglected the Psoriasis may persist for a long time, one patch succeeding another, or it may form the starting point of superficial ulcer.

There is another and much more extensive disease of the mucous membrane called Chronic superficial Glossitis. At the commencement of this disease some portions of the membrane present their natural appearance, while others are of a deep red colour and raw looking, these patches are more or less oval, their surfaces smooth and glossy and are denuded of their epithelium and the papillæ are obliterated by distension. They are somewhat elevated and hard to the touch in consequence of interstitial thickening. The French writers have described them under the name of "Plaques muqueuses." The tongue is large and swollen at the edges, it takes the impression of the teeth very distinctly and the lines thus produced are prone to ulcerate. Indeed it is no uncommon thing to see superficial ulcerations on such tongues, but they are not caused in the same manner as in the earlier stages of this disease, for these are due to breaking down of this disorganized mucous membrane. The whole organ has a bluish colour, as if the circulation were retarded, in consequence of the matted and thickened state of the tissues. The mucous secretion all over the affected portion is viscid and glairy and sometimes the patient's breath is extremely fœtid. He complains of thirst, especially at night; and when he wakes in the morning, his tongue feels dry and cracked. If this state of things goes on, the whole tongue may be altered in character. Mr. W. Fairlie Clarke (late Surgeon at Charing Cross Hospital) had a case in which none of the healthy mucosa was left on the anterior two thirds of the tongue. Supposing the more active mischief be checked, the swelling subsides and the tongue resumes the natural size :—indeed it may have become smaller and rather misshapen from irregular contraction of the diseased parts, but the membrane never recovers its healthy character. The patches that have been affected remain smooth and shining. The papillary structure has been impaired and what is left is in fact cicatricial tissue, this is exquisitely sensitive to hot acid, or pungent substances and readily becomes inflamed from slight causes. A common syphilitic ulcer of the tongue is very hard, and has well defined overhanging edges, is very painful, and when it ulcerates presents an unhealthy surface.

Syphilis may cause disease in any nerve, or the seat of any function in the brain, causing frightful paroxysms of pain, and during such an attack from disease of the fifth nerve, it reflexly causes clonic contraction of the masticatory muscles so as to make the teeth chatter together.

Zambaco relates several cases where the sense of taste was lost in persons, whose tongue was enlarged by a syphilitic tumour, as the mass grew less, so the taste was restored.

The taste is imperfect in a person who has lost the hard and soft palates through ulceration, (but the complete loss of taste is exceedingly rare,) the faculty of smell is generally lost.

The palate and the jaws are very commonly attacked in the tertiary stage, most commonly the palate (hard and soft) but the alveolus is rather rarely destroyed, for syphilis seems to have more effect on compact bones, which have a soft thin covering such as the flat cranial and palate bones. It causes an ulcer on the soft tissues of the palate, this gradually exposes the bone which then necroses and comes away, forming what is often seen in this hospital as "acquired cleft palate. Syphilis seldom destroys bone by caries without its first being exposed by ulceration. The great authority, Mr. Jonathan Hutchinson, divides the course which syphilis runs into 4 stages. The following are the stages and the affections the mouth suffers during them.

1*st, or Primary Stage, or stage of inoculation.*—The only way in which this stage affects the mouth is when it is the seat of inoculation, and a primary sore is formed in the part inoculated.

2*nd. The Secondary Stage.* Simultaneously with the rash on the skin, symmetrical ulcers form on the tonsils ; these are kidney-shaped, have a tawny grey base and abrupt edges. Little or no pain is felt and they do not spread.

Nearly as constant as the ulcers on the tonsils we find patches of inflamed mucous membrane in the mouth, pharynx, on the tongue, palate, and cheeks ; these patches become very considerably raised and assume the form known as condylomata.

If there are condylomata in the pharynx there are sure to be some at the anus and *vice versa.*

It is supposed that these patches are the ordinary eruptions modified by the position and moisture of the parts.

In this stage Periostitis is slight and transitory.

3rd Stage, or interval of latency or relapses. The patient is sometimes wholly free from any sores, but sometimes receives several reminders in the form of sores on the tongue and lips.

4th Stage, or Tertiary, or sequelar stage. The persons in this stage suffer from unsymmetrical ulcerations in the mouth and throat tending to spread widely and deeply. The most common affections of the mucous membrane encountered in this stage is a rapidly spreading ulceration of palate and pharynx. This differs from the throat affections of the earliest stages because it is deep and causes loss of tissue, while the others are superficial and caused by inflammatory deposit.

Cicatrices left by these ulcers narrow the pharynx and and occasion difficult deglutition.

Syphilitic periostitis occurs in this stage, and when it does so in the palate, alveolar processes, or other bones in the nasal passages it may cause exfoliation of portions of them.

When the bones are exposed by ulceration of the soft parts exfoliation of parts of them is sure to occur.

The Muscular substance of the tongue is most commonly attacked by muscular nodes and gummata.

Hereditary Syphilis. The teeth are a great help in the diagnosis of hereditary syphilis. It is very common to find all the incisors dwarfed and malformed; sometimes the canines are also affected. These teeth are narrow, opaque, and peglike, their edges are jagged and notched. Owing to their smallness their sides do not touch, and therefore interspaces are left. The characteristic malformation of the upper central incisors consists in a dwarfing of the tooth, which is usually narrow and short, and in what Moon calls, the atrophy of the middle lobe. The central incisors are normally formed in three lobes. In a syphilitic central, there is an arrested development of the central lobe or pillar, thus causing the crescentic notch at the biting edge. From this notch a shallow furrow passes upwards on both anterior and posterior surfaces, nearly to the gum. It may vary much in degree in different cases. Sometimes the teeth diverge and sometimes they slope towards one another. In a few rare cases only one of the incisors may be notched, the others being of the natural size and shape. In a considerable number of cases of hereditary syphilis, the teeth show no deviation whatever from the normal standard. It is only in the permanent set that any peculiarities are observed. The first set is liable to premature decay but is not malformed. Diffuse stomatitis without ulceration and extreme inflammation of the mucous membrane of the mouth is peculiar to inherited syphilis. An infant when a few weeks old, suffering from syphilitic skin diseases, may have the mucous membrane red and humid and the gums swollen with condylomata commonly, forming a condition known as "Snuffles."

Treatment, Mercury, the oldest known remedy, is now recognised by most medical men to be the best and most infallible drug for the cure of the Primary and Secondary stages of syphilis.

But for late Secondary and Tertiary Syphilis, the best drug by far is Iodide of Potassium, even then, in treating these stages, Mr. Savory recommends first a short course of Mercury, as the Iodide of Potassium has a better effect after it.

Of course there are a great many opponents to the use of Mercury, because it is a drug, slight doses of which cause serious effects in some people, whereas others can take a quantity with impunity, and therefore when given the patient requires that careful attention and watching, which some do not sufficiently appreciate.

It is an objection against the use of Iodide of Potassium, that it causes an unpleasant looking rash called Hydroa ; but the cure of the rash is simple, as leaving off the Iodide and giving a purge, will, in a few days cure it. A running at the nose, a form of Coryza called Iodism, is also induced by Iodide of Potassium, but if the dose of the drug, is increased the running almost immediately stops ; the reason of this is not properly known, but is supposed to be that the small dose acts as an irritant and the larger one in a manner not yet understood.

Drugs and the modes of administering them. The favourite and most convenient is by the mouth in the forms of Liquor Hydrarg., Perchlor., Hydrarg.-cum Creta as a powder, or a pill of green Iodide of Mercury, Opium ¼ to ½ gr. is also given to obviate the irritation of the bowels. Iodide of potassium is given by the mouth for the cure of advanced secondary and tertiary syphilis, combined with mercury, or a little Carbonate of Ammonia. The dose of Iodide of Potassium is 3-5 grains, but in time may be increased to 30 or 40 grains.

Of other plans suitable for children, the best is inunction, which is performed by either rubbing $\frac{1}{8}$-$\frac{1}{4}$ of an ounce of mercurial ointment on the inner side of the thighs, or placed on a bandage and rolled round the body of the child, this latter is best for very young children. When, for other reasons, it is inadvisable to administer it by the mouth, mercury may be given as a hypodermic injection of 5 minims of 1 in 10,000, or by vapour baths by means of Calomel vapour of the Perchloride solution. When giving mercury, watch for purging, salivation and mercurial tumours. The above drugs may be left off for a day or two when thought necessary, and Donovan's Solution be given as an alterative. Local treatment may be adopted for the different sores but experience teaches that only a thorough constitutional treatment is of any permanent good. Painful secondary lesions of the tongue may be painted with cocaine, and the ulceration and sore throat treated with Lotio Nigra, or Boracic acid used as a gargle.

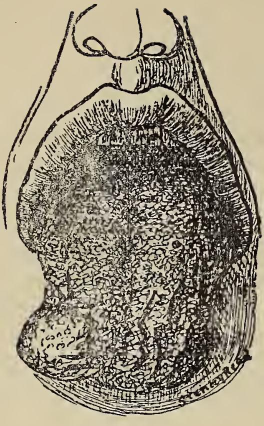
As to diet, white fish, plain meats, cream, milk, and raw eggs are very beneficial ; cod liver oil helps greatly to keep up the patient's strength. All stimulants must be strictly forbidden, excepting good claret, weak sherry and water ; also any excitement must be avoided.

Cold and damp are very injurious to a syphilitic patient. Hot and Turkish baths may be taken once or twice a week, unless found to be too weakening.

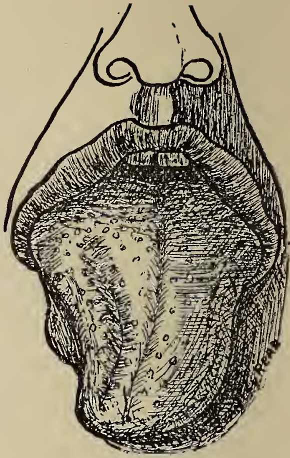
Warm clothing, especially flannel, should be worn.

These, of course, are only a few of the facts about Constitutional Syphilis, for in a limited space like this only the main facts can be given of a subject on which thousands of pages have been written.

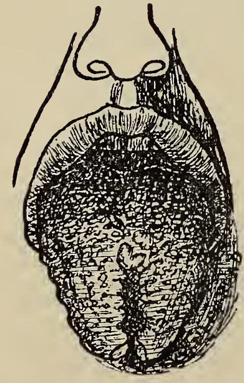
Anchorage Screws.—Mr. J. J. Andrews, of Belfast, Ireland, recommends for anchorage screws, to be used for retaining gold and amalgam fillings, and crowns, the long steel screw used for hinging the ring on a watch. They have a large head, a sharp thread, and can be cut to any length. Ask your jeweller for " Bow-screws." They are efficient and inexpensive.



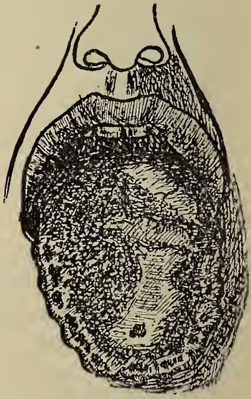
Syphilitic Gummy Tumour and Fissures.



Fissure after absorption of a Gummy Tumour.



Deep Syphilitic Ulceration.



Chronic Superficial Glossitis.

DENTAL CHEMISTRY.

By F. D. Nellie, M.D.S., Syracuse, N.Y.

Notwithstanding the fact that our knowledge of caries of the teeth has reached a point of comprehension, it must be acknowledged that the theory regarding its many causes is still open for discussion.

When the science of dentistry was yet in its infancy, and when diseases of all kinds were attributed to humours of the blood, decay of the teeth was then considered a purely constitutional disorder, and cavities in them were supposed to be the abode of worms. The Chinese are still working on a theory of this kind, and the times have but just been bridged over when a leading French dentist tried every possible means to apprehend some of them; and for years many eminent dentists maintained similar views, leading far into the present century. We will now pass over the inflammatory, the vital, and the many other theories, and adopt the more acceptable one for consideration—"the chemical."

The chemical theory takes into consideration the vital and complex structure of the teeth, the invulnerable hardness of their tissues, and their power to withstand any disorganizing influences better than that of an acid, and such constitutional disturbances as are capable of generating and elimininating aciduous elements. All is now dependent upon conditions "congenital and hereditary", whether during the histologic formation of the teeth, the mother and child were surrounded by influences conducive to the healthy growth and renovation of the organic tissues.

In so far as these conditions have not been fulfilled, the teeth will show the consequences. Pits and longitudinal markings in the enamel will indicate metamorphic arrest of tissue supply—climate, sex, food and diseases common to childhood, adolescence and maturity. Environments of every nature as well as hereditary causes, influence the teeth during their growth to take different degrees of hardness. Once erupted, their durability is then dependent upon the condition of the secretions as well as other substances surrounding them. The teeth are of alkaline construction, the saliva in which they are submerged, gives an alkaline reaction, and the moment any incompatible substance is introduced into the mouth chemical action begins. When it passes beyond the point ot neutralization, and the residing property is still of an acid nature, erosion of the enamel ensues. It is in accordance with nature that matter which is taken as food must be perishable, and the changes it must undergo is oxidation, or chemical action.

The elements of both organized and unorganized substances are known as proteine bodies or compounds, and are represented by C_{36}, H_{26}, N_4, O_{10}, with a small but variable amount of sulphur. When the unorganized compounds—both animal and vegetable matters, are exposed to ordinary temperatures, they spontaneously ferment. The various processes are known as vinous, saccharine, acetous, and the putrefactive, and produce in their regular order, wine, alcohol, sugar, and vinegar, and putrefactive decomposition. It is pretty well understood that the changes wrought by fermentation do not all take place in the mouth, except on such particles of food left lodged and undisturbed in contact with the teeth.

Ptyalin, one of the elements of saliva, is albuminous in its substance, and will readily act as a ferment, and the changes from sugar to lactic acid are a natural consequence. If sugar is mixed with the food, and dilute nitric acid is brought into conjunction, it is converted into saccharic acid. If it is sugar alone, oxalic, tartaric, citric, malic, and acetic acids produce changes that give to them the effect of mineral acids. In looking over the list of acids in the U. S. Dispensatory more that seven hundred are found of different kinds, most of which are used in some form or other medicinally. When given internally, the most disastrous kinds are supposed to run the gauntlet of the teeth. But much, aye too much, is seized by the cheesy deposits of food negligently lying about the teeth, adding intensity to the acids already there, and fuel to the fire of disintegration. Physicians, as a body, are preoccupied by the closest attention to their own specialities, and few of them consider it a part of their duty to give such instructions to patients, (whilst passing through a course of continued illness,) which might largely obviate the consequence of food and acids upon the teeth. As a recapitulation of the diverse conditions to which the teeth are subjected, and the many causes that lead to their dissolutiou, I have only to ask is there no remedy suggested? No prophylactic whereby the enamel can be made to be uniformally hard, and the dissolving liquids forever withheld ; the answer might be, yes. If temperaments can be altered, and climatic conditions be placed under one's control so that, in the propagation and advancement of the human species, hereditary and congenital diseases shall nevermore be transmitted to posterity ; that the teeth of all humanity shall be of an equal hardness and durability ; that they shall hold neutral relations to both acid and alkaline productions, if, I say, changes such as these can be inaugurated, the remedy is found. But, if propositions of this nature are placed beyond the possibilities, the next best remedy will be to teach our patients the precept "Cleanliness is next to Godliness" and the nearest they can reach the throne of conservation of the teeth, is through the grace of their dentist.

Dr. W. W. Perkins : I attribute good teeth to early and proper diet. My daughter, who is now thirty years old, in her early days depended entirely upon milk, graham bread and the like for her daily diet. She wanted nothing more and I have yet to find the first sign of decay in her teeth.

Dr. J. C. Curtis : All teeth, that decay upon approximal surfaces, if filled will decay if they are subjected to the same condition and influence, but if we insert a proper filling we have made this change. The best way to get rid of an acid in the mouth is to neutralize such, and this can be done to a certain extent by properly cleansing the teeth and surrounding parts.

Dr. G. L. Curtis : In this present time, too much medicine is given by our physicians regardless of anything but the disease they are after, and often we find them treating the symptoms instead of the disease.

To Preserve Mercury Pure.—Keep it in a glass bottle holding one to two ounces, stopped with a cork through which is put a "chicken quill," the end of which comes to a point. At this point a hole is made for exit of the mercury. Cover the mercury with alcohol. This keeps the metal bright and clean. The glass bottle enables you to see the mercury—an advantage. When the bottle is inverted for use the mercury fills the quill and the alcohol always rises to the surface.

COPPER AMALGAM.

By G. V. Emens, Fulton, N.Y.

Of all operations in dentistry the apparently simple one of filling a tooth has excited most thought and discussion. I think it can safely be said, that to successfully perform this operation, has, on many occasions, taxed our capabilities to the utmost. What material to use, and how to use it, is the constant study of our lives. Your committee have kindly asked me to give my experience with copper amalgam. I have made many experiments with it, both in and out of the mouth; the result of which has been such as to lead me to place this material *first*, as a tooth preserver, in those cases we so often find, of soft, chalky, decalcified teeth.

Amalgams of various kinds have been utilized for filling teeth for about sixty years. The first used was made from coin silver, and contained about ten per cent. of copper. We have all seen some of those ancient fillings, and have been astonished at their preservative qualities. During the past few years many attempts have been made to secure an amalgam that should have the desirable quality of retaining its colour in use, and success has attended these efforts; but, I believe not many will claim an improvement, so far as the power to preserve the tooth is concerned. As amalgam preserves a tooth, chiefly by a deposition of metallic salts in the dentine, any combination that entirely prevents discolouration, at least in soft, moist teeth, will be detrimental to the tooth preserving properties of the material. Copper was at first, and for some time regarded as a deleterious, if not actually poisonous ingredient in amalgam alloys, which led to the tendency to discard this metal, and to increase the quantity of tin, reducing the quantity of silver. Copper amalgam should be composed of chemically pure copper and re-distilled mercury, without a trace of other metals.

In the use of this material, the best results attend my efforts, when I observe great care in heating; better success arises from exposure for a longer time to a lower heat. It should never be heated until it turns blue or brown, as it volatilizes the mercury, and leaves free copper which immediately oxidizes. When the required amount of heat has been applied, place the amalgam in a mortar and crush and triturate thoroughly, after which place it in the palm of the hand, and manipulate with the finger, lightly and rapidly. If too soft, squeeze out the excess of mercury, using a chamois skin and pliers. Place the filling on a porcelain slab, heated to about 110° Fahr. Heat the instrument to the same temperature. Dry the cavity with hot air if practicable, and pack the filling as closely to the walls as possible. When full, smooth off with wet bibulous paper, and leave the polishing for a subsequent sitting. In my experiments with this material, I have found a slight shrinkage to occur, but less than with any other alloy that I have used.

I would not recommend the lining of the cavity with this filling, covering with a high grade alloy. If, however, this should be attempted, I would suggest waiting for several days for the copper to harden perfectly ; then cut retaining points depending upon a mechanical adhesion, as the two alloys have but little affinity for each other. My preference is to cap the copper with gold, and know of no objection to this practice. I formerly varnished the interior of cavities before filling with amalgam, but never do this with copper, as the chief virtue of this material lies in its formation of an oxide, or sulphide, both of which are excellent and durable antiseptics, readily absorbed by the dentine, which thereby becomes well protected from the farther progress of decay. For this reason, as well as for its tonic or stimulating properties, the pulp will tolerate the presence of this filling better than any other alloy, especially those containing platinum or zinc.

There are also less thermal shocks. Its entire freedom from any " spheroidal tendency, and its freedom, practically, from shrinkage, makes it in my opinion, a desirable filling for that class of cavities, which, for any cause, you do not desire to shape as for gold or for other amalgam. Some English writers speak of copper amalgam as " gradually disappearing, and by decomposition rather than by attrition." Such a case has never come under my observation, but should it occur, I should judge it to be caused by using too large a proportion of mercury. I have no suggestions as to where this filling should, or should not be used ; every operator must use his own judgment in the matter ; but as a result of experiments, I believe it to be the most reliable adjunct we have in saving teeth of that class, that, with the material heretofore used, has baffled the best operators.

British Journal of Dental Science.

LONDON, JUNE 1st, 1889.

EYE STRAIN AMONG DENTISTS.

Among the many ailments to which dentists appear to be exceptionally exposed are those caused to their eyes from overstrain whilst at their work. As has been pointed out over and over again these ocular troubles have effects which influence prejudicially, the whole individual inducing in some cases the most severe forms of headache, hemicrania, and even disabling from work. The eyes of dentists have imposed upon them greater strain than those of most professional men, prolonged fixation in a constrained posture is detrimental even to the normal or emmetropic eye, but when this strain is imposed upon eyes which are structurally aberrant from the emmetropic type, it is sure sooner or later to give rise to intra-ocular disease. Sight to be perfect requires a regularly formed globe of the eye, duly developed ocular muscles, so that just and equal movements of the eyes can be effected, and a healthy state of the nervous system innervating these muscles. Added to these we must have a due blood supply of healthy blood to the vessels of the choroid, and a normal condition, as to shape, texture and nutrition of the media and internal parts of the globe. Departures from the due development of the globe, when, for example, it is too short, or too long, produce errors of refraction, that is, the individual is unable to see objects distinctly at the normal range of 18 or 12 inches, he may be short-sighted—myopic, or long-sighted—hypermetropic, but the results are the same—ocular fatigue, dimness of vision after a few hours work, recurrent headache when the eyes are used, especially severe after doing fine work, or employing artificial light. Such eyes are commonly imperfect in another respect. They are astigmatic. The globe of the eye may be considered to be made up of a great number of circles running from vertical to horizontal, and the points of focus where the rays of light are collected together and become "an object observed" may be taken as the collection of the foci of these circles or meridia. When the globe is flattened, or bulges too much in one or another direction, the meridia are irregular and the foci are thrown out of the whole eye focus, and hence portions of the object seen will be blurred, and so we see things indistinctly—this is astigmatism. Now these defects of refraction—myopia, hypermetropia, presbyopia (old sightedness), astigmatism—are all remediable up to a certain point by kindly Nature herself. We accomodate the eye by its intra-ocular mechanism, and so in part counteract the effects of the abnormality. This effort at accommodation, however, cannot be maintained without imposing a severe and deleterious strain upon the eye. Again and again repeated, the eye becomes congested. Its nerves grow exhausted and greater and greater efforts at accommodation are required to achieve the desired end, until at length choroiditis, or some other condition equally serious is set up, and the individual loses the use of the eye. The prolonged effect, also, causes severe lancinating headache, a condition which naturally soon tells upon the general health, and unless its true cause be determined and corrected this headache resists all medicinal treatment, and its unhappy victim goes about with the dread of a brain tumour, to add an additional horror to his existence. Fortunately these refractive troubles have only to be fully understood to be remedied, the mischief is we, many of us, fail to appreciate their importance, and persist in imposing the overstrain upon our eyes rather than seek for the advice of an ophthalimc surgeon and adopt glasses. We have yet to consider the other conditions engendered by overstrain, which we propose to do in a subsequent article.

THE EFFECT OF CIVILIZATION UPON THE SKULL.—Dr. Dight gives an account in the Journal of the American Medical Association, of his examination of a collection of human skulls which are stored away in an old monastery in the Kedron Valley, midway between Jerusalem and the Dead Sea. He had made a careful comparison of these skulls with those of the same race at the present day. The measurements show some significant differences, the Caucasian skull has during the past thirteen centuries increased in circumference nearly two inches, and has gained in cranial capacity three and a half cubic inches. There has been no increase in width. The brain has gained in height and length, that is to say, there has been a development of the upper and anterior parts of the brain, the parts which we should expect to increase by education and civilization, as they preside over the moral and intellectual functions. The lower portions of the brain, in which the lower or more selfish propensities are centred, and which give breadth to the head, have, in the march of the centuries, failed to grow as rapidly as the higher brain centres, hence the non-increase in the width of our skulls.

TAKING LOWER IMPRESSIONS.—Dr. F. C. Green in experimenting, in taking lower impressions, believes he has succeeded in finding a means by which a perfect impression may always be obtained in those difficult cases where the absorption has been great and where the attachment of the muscles is very close to the alveolar border, rendering it difficult to construct a plate that will not impinge upon the muscles and rise whenever the patient opens his mouth or raises the tongue. This method is as follows: Use a very narrow impression cup, one not much wider than the alveolar ridge; fill the cup with plaster, very soft, adding a little sulphate of potash to make it set rapidly. When hard, remove from the mouth, and with a small scraper, remove a thin layer over the entire surface of the impression; trim the edges, and especially the tongue. Place the impression in water for a few moments and when thoroughly wet fill it with very thin plaster, not thicker than cream ; place it in position in the mouth with gentle pressure ; observe that the buccinitor muscle be not impinged upon and request the patient to raise the tongue, letting the point rest upon the cup. When hard, remove, and if each step of the process has been carefully taken, the result will be an impression from which a plate can be constructed that will not rise or rattle while speaking. He never uses anything but plaster for taking impressions of the mouth, believing it to be the only reliable material for this purpose.

THE USE OF GENERAL ANÆSTHETICS TO COMBAT SENSITIVE DENTINE.—In an instructive paper, dealing with the subject, Dr. Callahan refers to the insufficiency of local anæsthetics in dealing with sensitive dentine in nervous persons. He condemns, and we thinkvery properly, the employment of chloroform by the dentisthimself, but refers with satisfaction to the use of nitrous oxide gas. He finds that if this agent is pushed just to the stage of exhilaration without waiting for unconsciousness, a very satisfactory analgesia results. Two applications of the face-piece with a few inspirations on each occasion is all that is needed. This seems a new and useful application from our old friend " laughing gas."

TO SHARPEN INSTRUMENTS.—It is a good plan to place on the mandrel three discs,—one of thin metal, one of pasteboard, and one of emery paper, forming a flexible cushion, with even surfaces and no grooves.

DENTAL BROOCHES.—A writer in the *Dental Review* makes the following useful suggestion : To convert jewellers' brooches into superior dental brooches, dip a dozen into sperm oil, lay on a sheet of tin or brass, ignite the oil, and allow it to burn off. This can be repeated until any degree of softness required is obtained. The same simple method of tempering may advantageously be employed for small instruments.

Cocaine for Obtunding.—Cocaine is no by means reliable as an obtundent for sensitive dentine, but the best results obtained are arrived at when a saturated solution in glycerine is employed.

Solvents for Tartar.—There is a mistaken idea prevalent that sulphuric acid dissolves tartar. As a matter of fact, tartar consists largely of lime salts, and adding sulphuric acid would produce the highly insoluble sulphate of lime.

Corrective for Dry Mouth.—Carbolized glycerine applied to the mouth three times daily prevents the mouth becoming dry. The formula is—

Carbolic acid	gtt ×
Glycerine	ʒi

M. Apply on palate or mouth with small brush.

Antidote for Carbolic Acid.—Common soap is according to the *Med. Presse* valuable in cases of poisoning by carbolic acid. It should be given immediately and repeated until all symptons of poisoning have disappeared.

An Improved Root Canal Broach.—It is made from gold wire which has been alloyed with platinum (to give stiffness). No. 25 standard wire guage is the size used. The broaches are made by filing down suitable lengths to a taper point, in the same manner that the piano wire broach is made. The advantages claimed for the platinum gold broach are that it is not corroded by medicaments ; and in case a bit is twisted off in a canal, it being incorruptible can do no harm, and may be allowed to remain. It may also be an adjunct to secure a perfect filling in a very fine or tortuous canal. When the gutta-percha solution has been thoroughly pumped in, cut off the end of the broach and pass it up to the apex, leaving it there permanently. This is only needed where the canal is too small to receive a gutta-percha cone. This broach is devised by Dr. H. J. McKellops, a dentist of St. Louis.

MORE ANENT THE ARCHÆOLOGY OF TOOTH BRUSHES.—Those who have followed the very interesting discussion which has appeared in our columns about the antiquity of the tooth brush will welcome the following which we take from *Notes and Queries* :—" Unless I mistake, the fourpenny tooth-brush of 1729, cited by Mr. Hartshorne, is the earliest that has been mentioned in 'N. & Q.' As I have not access to Dr, Adolph Köcher's 'Denkwürdigkeiten der Kürfurstin Sophie Von Hannover' I do not quite know what amount of faith may be put in the exactness of the translation, entitled 'Memoirs of Sophia, electress of Hanover,' which has lately been published by Richard Bentley and Son ; however, I give for what it is worth the following passage, which seems to show the tooth brush already active in 1640 :—'I rose at seven in the morning (writes the lively mother of our kings to be) and was obliged to go *en dèshabille* to Mlle. Marie de Quat... ...who made me pray and read the Bible. She then set me to learn the 'Quadrains de Pebrac' while she employed the time in brushing her teeth ; her grimaces during this performance are more firmly fixed in my memory than the lessons she tried to teach.'—Pp. 4-5. Years ago—some time in the fifties —I was told of a girl, daughter of a well-to-do farmer I bebelieve, who was mediæval as regarded the cleaning of her teeth, inasmuch as she merely rubbed them with a soapy towel. I sometimes think that the attrition in which we so joyously indulge when we " sharpen " our ivories, as the unsophisticated maidservant reported of a man whom she saw at work with his brush, may be easily overdone, and tend to the profit of the dentist rather than to our own. In Egypt the finger—made before tooth-brushes as well as " before forks " —is sometimes used as a substitute for bristles, vegetable fibre, or other detersive agent :—'After every meal, servants were in attendance with napkins, ewers, and basins. One servant holds the basin, while another pours a stream of fresh water over the hands. Some of the natives, while performing their ablutions, make a thick lather of soap, which they thrust into their mouth, using a finger as a tooth-brush."—'Court Life in Egypt,' by Alfred J. Butler, p. 11. ST. SWITHIN.

Abstracts of British & Foreign Journals.

OHIO STATE JOURNAL OF DENTAL SCIENCE.

THE CAREFUL FINISHING OF AMALGAM FILLINGS.

By Dr. Geo. F. Cheney, D.D.S., St. Johnsbury, Vt.

The writer refers to a case of a molar tooth which had been extracted having been filled on its posterior surface with amalgam, where the amalgam had been forced up over the cervical wall, between it and the wisdom tooth. This filling became such an irritant to the surrounding tissues that absorption advanced rapidly, and when operated upon the wisdom tooth was destroyed, all the process gone, and a portion of the palate bone considerably absorbed, as well as much injury done to the adjacent first molar. This case, which was mere carelessness, recalls a similar case in his own practice. A lady complained of a tooth. Examination revealed pus oozing out from between an upper first and second molar, probing showed a mass of amalgam forced between the teeth which was very difficult to remove. In nearly every mouth with any number of amalgam fillings, we see evidences of carelessness in finishing, the gum instead of being healthy is of a bluish colour and bleeds upon the slightest touch, and upon examination we very often find the filling overlapping the cervical edge a thirty-second of an inch and sometimes more. The filling itself, in such cases, is enough of an irritant to keep the gum constantly inflamed, it also leaves a shoulder upon which filth is accumulated. Too much care cannot be given the finishing of amalgam fillings. The writer has for some time adjusted the rubber-dam for most approximal fillings of amalgam, with better results. In most cases the dam can be adjusted without ligatures by cutting small holes and soaping the rubber on the under side and putting over four or five teeth, this makes the adjustment of the dam comparatively easy. He advises to work the amalgam into the cavity with bibulous paper following Dr. Bonwill's instructions, then finish with burnishers as much as possible, and with a piece of floss silk go up between the teeth, forcing the surplus amalgam up against the dam. Clear this surplus out as much as possible, and taking off the dam will remove the remainder. The patient is required to come in for another sitting. He finishes such fillings with sand-paper disks and strips. When he cannot make this second engagement he finds by the use of the floss silk between the teeth, these fillings can be very nicely finished without leaving an over-lapping mass at the cervical edge or between the teeth. A nicely adjusted matrix is of very great service and almost indispensable in some cases. Cases of ptyalism he believes are caused by carelessness of the operator and not by the amalgam.

NEURECTOMY OF THE INFERIOR BRANCH OF THE FIFTH NERVE.

By J. H. Glass, M. D., Utica, n.y.

No mention is made of excision of the inferior branch of the fifth nerve, excepting by the opening of the inferior dental canal through the ramus of the jaw externally. This operation necessitates the division of some or all fibres of the masseter muscle, the repair of which may not always be rapid and complete owing to its almost constant and semi-involuntary action. If absolute rest is enjoined—an essential to prompt and perfect repair—much discomfort results. As to cosmetic effect the operation is not a promising one as a more or less ugly superficial cicatrix is inevitable, and the facial contour is frequently disturbed following imperfect union of the muscular fibres or contractions incident to occasional pus accumulations. These objections led the writer to suggest an operation which would avoid these drawbacks. Two years since T. W. consulted for relief from a persistent neuralgia, of the inferior branch of the fifth nerve, of several years duration. The patient was about 55 years of age, and was wasted and much depressed from his prolonged and almost uninterrupted pain. The jaws were widely separated and held in possession by an ordinary dental prop placed on the side opposite to that of the proposed operation, an assistant steadying the head and controlling the tongue when necessary with a depressor, with the index finger over spine of the inferior dental foramen—a land mark of the greatest importance in this procedure—an opening was made with angular scissors cutting under the finger five-eighths of an inch in length backward and upward, separating the soft parts down to and about the nerve which lies in front of the artery, at this point hugging the greatest concavity of the notch just above the spine a Theobald's strabismus hook was passed under the nerve which, isolated from the artery, was seized with Wecker's clamp strabismus hook, the nerve firmly held, a hook bistoury was passed, the back of the instrument pushing the soft parts up as high as possible, the cutting edge was turned and the upper section made by a to and fro motion of the knife ; with the trunk of the nerve still held in the clamp it was drawn up as much as possible and the lower section made in the same manner completing the neurectomy. In the case detailed five-sixteenths of an inch of the nerve trunk was removed which seems to have been ample as he has had no recurrence of his neuralgic symptoms up to the present time. It should be remembered that all nervous regeneration takes place from the central end of the nerve, and that the relief promised is in constant relation to the more nearly approximate central section. The danger of wounding important vessels must not be ignored, but little risk is entailed if we bear in mind the relation of the internal maxillary artery which, near the point involved, skirts the inferior margin of the internal pterygoid muscle.

CALCIFIC INFLAMMATION.

By J. G. Tempeton, D.D.S., Pittsburg, Penn.

Calcic inflammation is used as a term to express the origin of an inflamed and hæmorrhagic conditions of the margins of the gums so frequently seen, the cause is usually obvious. He suggests to name this disease, hæmorrhagic ulitis. "Pyorrhea alveolaris" is an appropriate name only in certain cases. We refer now to its scorbutic origin and of its having some symptoms in common with scurvy, though differing in intensity and duration, and if we compare these departures from the normal state, either systematically or locally, we do not find petechiæ or vibices in connection with the malady which now engages our attention, but we often see what may be called a mild form of, or partial ecchymosis, the visible signs of which are observed in the pale yellow or saddle flap color of the cuticle, there is in both the same tendency towards loosening and loss of the teeth and also hæmorrhage from the gums, more or less profuse from slight causes. The treatment for scurvy, whether preventative or curative is almost entirely dietetic and consists of fresh meats and all kinds of vegetables. That calcific inflammation, phagedenic pericementitis and pyorrhœa alveolaris simulate scurvy, the writer has no doubt, and he has for many years insisted on the use of the same dietetic regimen, and once in five days the application of a caustic, astringent, with occasional use of mild laxatives to correct constipation. No other systemic medication being necessary. When these instructions have been faithfully observed by the patient we have seen the pale yellow, tawny or septicæmic appearance of the face changed to almost the flush of youth in from four to eight weeks. The writer's treatment consists of the removal of all calcareous or serumal deposits, arresting all hæmorrhage with hot water and then apply pure and finely powdered sulphate of copper, which is also washed out with hot water, repeating the same locally as previously stated, until no longer necessary, the fifth application is rarely required. From the commencement of the treatment impress upon the minds of patients the importance of cleansing the mouth with soap, as the most necessary part of their toilet preparations, before partaking of the morning meal. An anti-scorbutic diet is ordered, viz. : fresh meats a regular use of pickles of any kind, a free use of lemons and oranges, and also the daily use of fresh vegetables, consisting of one or more of the following, viz: onions, cabbage, turnip, radishes, horse-radish, mustard, water-cresses, lettuce, spinach, celery, parsley, parsnips, carrots, potatoes, and sauerkraut.

TEST FOR COLOUR.—Place a button of amalgam that has one surface polished, into a solution of 40 to 60 grs. of sulpuret of potash in 1 oz. of water. Let remain 24 to 48 hours.

ARCHIVES OF DENTISTRY.

PYORRHŒA ALVEOLARIS.

By Dr. Rodrigues Ottolengui.

In September, 1888, a patient presented herself for the extraction of a wisdom tooth. Examination showed the following condition : Teeth, thoroughout the mouth, clean, and cavities all filled with gold in a manner attesting conscientious work ; *no trace of tartar present* ; absent, by previous extraction, four teeth, right upper third molar, both inferior first molars, and the left lower wisdom tooth ; all the teeth firm excepting four, the three remaining lower molars, and the left superior third molar. The tooth she wished removed was the right inferior third molar. The diagnosis was that pyorrhœa alveolaris was present about all the loose teeth, and the second left superior molar, and that it would be impossible to restore to a healthy condition the tooth which induced the patient's visit. This was accordingly removed. In this case there was no occluding tooth above, and the tooth was lifted up till it touched the gums of the opposite jaw, when the jaws were closed. The soft tissues were hypertrophied so that only the crown of the second molar could be seen.

A point of special interest is the fact that the disease had attacked the mouth at the four ends of the dental arches. On the right side, above, progress had been stopped by the timely removal of the wisdom tooth : below, the extraction in childhood of the six year molars had left spaces, and the disease had not passed these points. At the remaining corner, however, the wisdom tooth was badly diseased, as will be more exactly detailed later, and the disease had already attacked the adjacent second molar, though *only on the distal side.*

Treatment was suggested, and Dr. Rhein's plan tried. First, a method which should firmly bind the loose teeth ; and second, medicinal treatment of the sockets. He began with the upper wisdom tooth ; this was so loose that it could be moved readily laterally, and even pushed up into its socket from which it was slightly elevated. The rubber dam was applied over five teeth, the third molar pushed up into its socket till it assumed its proper position, and tied with gilling twine. Oxyphosphate was then smeared around the second and third molars ; a deep, wide groove was cut in the crowns of these teeth continuously from one to the other : gold filling having been laid across the floor of this groove, a piece of gold plate was laid in, and built around and over with gold and platinum. Thus the loose third molar was permanently united to the second, which was still quite firm, though diseased. On each side, the condition was similar, the second molars standing alone and very loose. Impressions were taken and bridges made as follows : A band fitted around the molar, having spurs to be burnished into grooves previously cut in the crowns, posteriorly and anteriorly ; a similar half band for the bicuspid ; a molar backed with gold plate for the space, and the three pieces soldered together. In applying, the rubber dam was placed, and the bands being smeared with oxyphosphate, were pressed into position. When the cement had hardened, the bridges were further secured by gold screws which passed through the bands and entered the substance of the tooth. These three operations made the loose teeth so firm that the patient could eat on them for the first time in four years. The medicinal treatment was as follows : A thorough exploration of all the pockets in search of serumal deposits, disclosed the fact that on one, the upper molar, they were present. These were removed with Rigg's instruments ; At the first sitting, Robinson's remedy was applied in each pocket on ropes of tissue paper : twice a week subsequently the patient was seen and the with a hypodermic, using :

R. Hydrogen Peroxide, - - - - - ℥ i.
Hydrarg. Bichloride, - - - - - gr. i.

After two weeks, for some reason, pus again appeared, and the Robinson's remedy was again resorted to. After four weeks, it became evident that the pockets were being filled with new granulations, and dressings of tannin and glycerine were tried. In addition to this, the patient was instructed to use a saturated solution (1 to 300) of Hydronapthol in distilled water, as a wash three times daily. Of the three teeth under treatment, the first operated on is now as solid, and socket as healthy as ever. The others are improving rapidly and are quite firm. In another case, in all apparent respects similar, the same method of procedure was attempted, and found impossible, owing to excessive pain produced by efforts at bridging. The patient is now being treated by medicines only, and will probably lose her teeth. The difference in these two cases is this: Both were expressions of a constitutional disturbance, which had been cured in the former, but which persists in the latter.

Reports of Societies.

STUDENTS' SOCIETY, THE DENTAL HOSPITAL OF LONDON.

Ordinary General Meeting, held May 13th, 1889, at 7 p.m.
W. Hern, Esq., *President*, in the Chair.

The minutes of the previous meeting were read and confirmed.

The President announced that the Society's Prize for last year's papers was awarded to Mr. Harsant. The examiners also wished to express their sense of the excellency of Mr. Dolamore's paper, which was an exceedingly good one.

The following gentlemen were proposed for membership: Messrs. Hall, Barkley, Gardner, Leigh, Goddard, Allin, Jones, Braine and Coysh.

On Casual Communications being called for, Mr. Harsant presented a lower canine with two roots ; Mr. Davis showed a dilacerated lower bicuspid ; Mr. Harrison showed a lower molar, in the pulp chamber of which was part of a pin, which had broken off while the patient was trying to remove some foreign material from a carious cavity in the tooth ; Mr. Porter exhibited a lower molar, the anterior root of which was bifurcated, the extra pulp canal having caused a great deal of trouble. Mr. Burton showed a lower wisdom tooth, in extracting which he had experienced great difficulty, one root having slipped down between the gum and the bone. The President exhibited a model of the lower teeth, showing absence of a permanent incisor on the left side ; the interest of the case lay in the fact that the temporary central and lateral had been geminated, and had apparently given off only one permanent successor. Mr. Hern also described an interesting case of chronic spasm of the left masseter muscle, in a girl of neurotic tendency. The spasm had yielded to Bromide of Potassium and rest.

Mr. Preedy announced that the President had presented to the Library of the Society, a copy of Heath's "Diseases of the Jaws."

The President then called on Mr. Stanley Read for his paper on "Syphilis, as it affects the mouth." [See page 475.]

Mr. J. P. Smith opened the discussion by mentioning the case of a patient who was inoculated on the lip with the Syphilis virus through drinking from a contaminated glass. He pointed out how clearly such cases showed the need of thoroughly cleansing all instruments. He mentioned the occurrence of cancer as a sequel or even concomitant of Syphilis, and referred to the difficulty of differential diagnosis. He did not regard the treatment of Syphilis as being at all within the province of the Dental Surgeon.

Mr. Woolf reminded those present of a case given in Tomes' Surgery, where a sailor had inoculated 25 persons with Syphilitic virus, by moistening the needle, with which he was tattooing them, with his saliva.

Mr. Dolamore stated that though it was possible Syphilis might often have been erroneously called "leprosy" in ancient times, yet the duality of the two diseases was amply proved by existing cases. As showing the wonderful action of Iodide of Potassium in the tertiary stage, he mentioned a case where perforation of the soft palate, about $\frac{3}{8}$ inch in diameter, was quite healed in two weeks by the exhibition of that drug.

Mr. Porter referring to cancerous ulcers in the mouth, remarked that he had not generally found them round in shape, and that he had found them indurated. He should like to ask Mr. Read whether the disease of the nerves of the brain, to which he referred, was due to gummata forming in the coats of the nerves, or to specific lesions.

Mr. J. F. Colyer referred to the exceeding virulence of Syphilis when newly introduced into a community. He believed it was more accurate to speak of the early, and late manifestations of Syphilis, rather than to seek to divide its progress into the hard and fast Primary, Secondary and Tertiary stages. He especially drew attention to the briny odour of the breath of Syphilitic patients, a point which, he said, had been first brought to his notice by our late Vice-President Mr. Herbert Williams. The odour was in no way due to Mercury, since the cases in which he had met it, had not been treated with that drug.

Mr. Rilot agreed with what Mr. Smith said about the difficulty of diagnosing Syphilis from Cancer. It was frequently the case that they existed together, or that the latter was a sequel of the former. This was especially likely in cases of leucoplakia of the tongue, so that great care should be taken in treating patients suffering from this affection that no source of irritation should be left in the mouth. With regard to the painlessness of syphilitic lesions, he thought that was the reason why patients neglected to come for treatment till the disease had advanced so far. Were the ulcer painful, cases of perforation of the palate would be rarer. He reminded his hearers that patients almost invariably denied the real cause of the lesion, and attributed it to some imaginary cause, or contemporaneous accident. He thought that the subject of treatment was beyond the province of the Dental Surgeon.

Mr. Baldwin could not agree with Mr. Rilot. He thought that the treatment was a most important point, and a knowledge of it necessary. He characterized the smell of patients' breath as not only briny but fœtid.

Mr. Hern was glad Mr. Smith had reminded members of the great necessity for thoroughly cleansing instruments after use, especially forceps ; for though it was a disputed point as to whether syphilitic saliva was virulent, there was no doubt that a drop of blood could communicate the disease. He agreed with Mr. Rilot's remark with regard to the care that should be taken not to cause any irritation in the mouths of patients suffering from Ichthyosis of the tongue. He mentioned that "stomatitic" or "honeycombed" teeth were considered by Hutchinson to be the result of the exhibition of mercury in early life.

Mr. Read then replied to the various speakers.

The President then accorded the usual vote of thanks to Mr. Read for his Paper, and those gentlemen who had brought forward Casual Communications for so doing, and announced that next meeting would be on October 14th, when Mr. Oliver would read a Paper on "Anæsthetics."

The proceedings then terminated.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

DISCUSSION

Upon Mr. Bland Sutton's Paper on Some Forms of Odontomes.

The President : Mr. Bland Sutton may be said to be a scientific explorer. His valuable and interesting paper here, and his lectures at the Royal College of Surgeons, embodying as they do, the result of his investigations, invariably contain much that is new to us, and there is not the least doubt that valuable generalizations will arise from his studies. We all recognize Mr. Sutton as an important member of the scientific world. Both because his papers either contain fresh discoveries, or throw entirely new light upon our present knowledge, we find it somewhat difficult to discuss them without time to digest them. There are, however, many members of our Society who are capable of discussing them, and I hope we may have a good discussion to-night.

Mr. C. S. Tomes : I believe, Sir, that the observation that Mr. Bland Sutton has made is the outcome of several years' reflection and investigation. I recollect some questions he asked me some years ago as to alterations in the tooth follicle that take place in rickets. This observation is an absolutely original one ; I do not remember anywhere to have seen any allusion of the kind : and it is one the value of which to pathology is very obvious. There is one matter that I should like to make a remark upon. Mr. Sutton says that he has carried a little further in point of classification and that the specimen would form what we understand by an odontome. Looking at the specimen it does not seem to me that it would. It seems to me, looking at the specimen, that the tooth tissue, so far as the dentine and enamel are concerned, is unaltered, and that had further calcification gone on the result would have been hypertrophy of the cementum. Odontomes seem to resemble only partially the ordinary tooth form. So that being further calcified the tumours would not correspond quite to any form of odontome that we are familiar with.

With reference to Mr. Mummery's specimen, it is a very curious little body. I had the opportunity of seeing it when it was fresh, and it is a little difficult to understand how it erupted. There is one point to which Mr. Mummery has not called attention, though it was merely an oversight on his part, as he remarked it when showing the specimen to me, and that is that its pedicle is attached to the wrong end, being attached to the base of the pulp. I have nothing to say in explanation of the fact, but it is a peculiarity that if thought out may enable one to get an intelligible history of it.

Dr. Mitchell : I should like to ask Mr. Sutton if he considers this a special class of odontomes, that is, out of and beyond what we ordinarily understand odontomes to be.

Mr. F. J. Bennett : I suppose Mr. Bland Sutton would call this a cementoma. The thickening of cementum would not alter the formation of the dentine in any way.

Mr. Storer Bennett: I had not the opportunity, Sir, of seeing the specimen when it was being passed round, but without wishing to challenge Mr. Bland Sutton's description or classification—that we all know is an extremely dangerous thing to do—I should like to say that there was one point which struck me as rather peculiar. In most animals odontomes occur symmetrically, though, if not absolutely unknown, they are extremely rare in human beings. It seems to me that the question suggests itself that if these odontomes are due to rickets, why do we not get a greater number of symmetrical odontomes in rickety people?

Mr. Paterson: I should like to ask Mr. Bland Sutton, Is it necessary for the ordinary sarcoma to contain four-fifths of myeloid cells in every case.

The President: If no other member has any remarks to make, I will call upon Mr. Bland Sutton to reply.

Mr. Bland Sutton: Sir, Mr. Tomes is quite right when he remarks that this thing has been slumbering in my mind for some years. I think it is about eight years ago that I had the extreme pleasure of making Mr. Tomes's acquaintance, and it was over the jawbone of a rickety baboon. I asked him several questions, but Mr. Tomes, in the cautious way which should distinguish all true scientific investigators, kept an open mind upon the subject. I have been at work upon the relation of rickets to odontomes since that time. Now, odontomes which occur in animals are of two great classes: those which I call cementomata, which are due to the ossification and enlargement of the follicle, and composite odontomes due to aberrations of the whole teeth germ.

To prove that they really arise from such conditions, I had the opportunity of examining the largest that has been known, in a horse. I decalcified it, and in the middle of the soft matter there was the outline of three teeth. With regard to the ill-shaped odontomes that we find in the human subject, they occur most commonly in the lower jaw, but in the classical case of Hare of Limerick, the odontome occurred in the upper jaw, and had the well-formed crown of a tooth attached to it.

When soft odontomes occur in the lower jaw of animals, they do not contain any trace of tooth substance. Had the soft tumours in the bears become calcified, we should have had a well-shaped tooth, such as we see in the human subject when the odontomes occur in the upper jaw, but in the case of the lower jaw the odontomes would have presented themselves as a shapeless mass of dentinal tissue.

With regard to the number of giant cells necessary to make a myeloid sarcoma, if our classifications are to be worth the paper they are written upon, our definitions must be sharply drawn, and therefore it is desirable to say that there must be at least four-fifths of these myeloid cells, and the tumours should have a maroon colour to make a myeloid sarcoma. It may be interesting to Mr. Paterson to know that the larger the number of these cells, the less likelihood is there of a recurrence of the tumour.

After the usual vote of thanks to contributors of communications, the meeting adjourned.

Dental News.

VACANCY.

Dental Hospital of London, Leicester Square.

The post of Medical Tutor is vacant. Applications to be made before 10th, July, to the Dean.

Hospital Reports.

Monthly Statement of operations performed at the Dental Hospital of London, Leicester Square, from April 1st to April 30th, 1889 :—

Extractions	Adults	959
	Children under 14	398
	Gas	1044
Stoppings	Gold	274
	Plasters	710
Regulations		81
Advice		54
Dressings and Miscellaneous		279
Total		3799

T. E. Constant,
J. P. Smith,
A. H. Smith, } *House Surgeons.*

Statement of operations performed at the National Dental Hospital, from April 1st to April 30th, 1889 :—

Number of patients attended		1840
Extractions	Children under 14	248
	Adults	399
	Under Nitrous Oxide	831
Gold Stoppings		132
Other Stoppings		379
Advice and Scaling		364
Irregularities of the Teeth		65
Miscellaneous		122
Total		2940

E. C. Fisk,
G. M. Keevil, } *House Surgeons.*

Work done at the Victoria Dental Hospital of Manchester during the month of April 1889 :—

Number of Patients attended		900
Extractions	Children under 14	625
	Adults	
	Under Nitrous Oxide	92
Gold Stoppings		87
Other Stoppings		48
Miscellaneous		231
Total		1033

P. A. Linnell, *House Surgeon.*

ANSWERS TO CORRESPONDENTS.

Enquirer—No list of Deaths from Nitrous Oxide has been published. According to the best authorities it is doubtful whether a death has occurred directly traceable to the gas.

Mr. Walton.—Such "interviews" are probably obtained on the same terms as an advertisement, it is not possible to legally interfere. The firm in question advertise in nearly all the lay press.

British Journal of Dental Science.

No. 514. LONDON, JUNE 15th, 1889. Vol. XXXII.

A CASE OF EPITHELIOMA SPRINGING FROM THE SOCKET OF A TOOTH. *

By C. S. Tomes, F.R.S.

The case which I wish to mention is one in which epithelioma arose in the socket of a second upper molar. It had one of its roots virtually if not entirely separate from the others, viz., the palatine root was almost if not quite separate from the labial roots. Screws had been put into these and a ring put round the tooth and a large amalgam filling contoured upon it. The tooth had remained comfortable for about eighteen months from the time it was filled. When the patient showed it to me he did so as being rather loose. I noticed that there were some rather ugly granulations round the neck of the tooth and took it out. I then found that the whole hollow socket of the tooth was occupied with granulations of epitheliomatous aspect.

I took the patient to my next-door neighbour, Mr. Christopher Heath. He said that he had not the least doubt but that it was a case of epithelioma. He suggested that an attempt should be made to destroy it with chloride of zinc paste. It was accordingly covered over by a vulcanite plate, and the paste kept in for twenty-four hours ; of course that brought away some sloughs, but the raw surface was never without the appearance of epithelioma. A second attempt at destruction with the paste was made unsuccessfully, and it was then decided that some operative interference should be undertaken. The patient was also seen by Sir James Paget. Mr. Christopher Heath being at that time ill the patient was taken to another surgeon, who was also of opinion that it was a case of epithelioma, but was averse to any operation.

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* Communicated to the Odontological Society of Great Britain.

There was a little hardening and thickening which extended from the mucous membrane on to the cheek, and the tuberosity of the maxilla was thoroughly involved. One surgeon having advised against operation, although every one else was in favour of it, made the patient undecided, and a delay of two or three months took place before he ultimately made up his mind to undergo the operation, which was then performed by Sir Joseph Lister, who exposed the part freely by an incision from the angle of the mouth nearly up to the ear. He chiselled away the bone, not resecting the entire maxilla, but rather attacking the disease where he found it. The whole of the tuberosity was removed and a hole made into the antrum. Immediately after the operation, on looking into the patient's mouth there was a very large hole indeed, as large as a very large walnut. That has speedily healed and contracted until it has come down to the smaller part of this plug. I am sorry to say that I am unable to find the model, which I must have somewhere, and unfortunately the patient is abroad. The difficulty about satisfactorily closing the hole is that it is situated on the edge of the hard and soft palates so that the parts behind it move and so do the parts outside of it. I cannot get anything to do to my satisfaction, but the thing that does best is a piece of velum rubber, thick where it fits into the hole, but very thin where it extends beyond its edges on the surface of the palate ; this is carried by a tongue of gold from the back of a vulcanite plate. It resembles in form a Kingsley velum for a cleft palate.

BRIDGE WORK.

By A. Retter, D.D.S. Utica, N.Y.

Presenting to you this subject, I merely aim to give you my experience in practical bridgework as evolved and carried out in my own practice. My methods and ideas may not meet with your approval, or harmonize with your own; however, as long as there have been or will be professional men, so long will there be a difference of opinions and methods, and it is only by a careful examination and study of many that we will finally arrive at practical results.

Bridgework, as at first practiced six or seven years ago meets the wants and wishes of the present day. There can be but little doubt that it has been, and still is, capable of improvement, and in fact the work we see now of experienced operators compares with that of several years ago like the elegant carriage with the clumsy cart. For this reason, we ought to judge rather charitably of this work when we find it coming to us in a faulty condition. Its true application is to-day better understood, the methods of its construction are neater and of a superior character, and there can be at present but little doubt in the minds of good practitioners that it holds a prominent place in modern dentistry. It is true that there are dentists high in the councils of the profession who are still opposed to bridgework, and undoubtedly so with some reason when we consider the destruction of good sound teeth to which its faulty application has led. Sound teeth were and still are cut off, pulps knocked out, more often in, and as an excuse principles are advanced utterly contrary to the best authorities.

Is it really necessary to cut off a sound central or cuspid, mutilate the articulating faces of good bicuspids and molars, in order to bridge one or more teeth ? In my practice during the last few years, I have seen no need of such destruction of good normal teeth. Probably the ideal adaption of bridgework would be a case where it is built upon already badly decayed, broken down teeth or roots, thus making an already broken down member do service for probably a few years longer.

However, we do not always or even often meet with cases where the bicuspids are lost and the cuspids and six or twelve year molars are left standing in a good condition, perhaps a plate has been worn for a number of years and the patient desires a more comfortable substitute. Sometimes the centrals and laterals are gone the sound cuspids remaining, indeed there are almost endless combinations calling for the best of judgment in applying this class of operations.

In most of such cases mentioned it has been and to a great extent still is, the practice to cut off the cuspids and to a great extent mutilate the bicuspids or molars, grinding away their masticating surfaces in spite of the agony and groans of the patients, knocking out the pulps of cuspids, thus creating a condition not exactly normal. The longer I practice bridgework, the more I am convinced that there is absolutely no need of such wholesale destruction. I most emphatically declare that no sound tooth need ever be cut off and its pulp destroyed for the purpose of bridging.

In my practice I get along very well by constructing well-fitting, strong bands around the teeth to used for a bridge, thus avoiding unnecessary mutilation. For instance: given a case where the bridge extends from cuspid to molar, both sound, living teeth. I shape the cuspid so as to be able to make an absolutely snug fitting band; I leave the articulating surface of the molar in its natural shape and level or shape its sides only; then I take an impression in plaster, pour Melotte modelling into it and construct a band of 22 carat soft gold to fit on the cut sides of the cuspid around it and over a shoulder cut on the lingual side, leaving a part of this side open, also the larger part of the labial side, thus avoiding the darkening of the tooth which will surely take place if the entire lingual surface is covered. Around the molar I fit a band likewise extending around it and just a trifle above or over the edge of the masticating surface. This done the bands are tried on the teeth in the mouth—for there is no model so perfect as the tooth itself—any little defects are remedied, the bands closely burnished to the tooth, carefully removed and filled with three parts sand and one of plaster; then I take a second band, much thinner and previously fitted over the metal moulds cut it into pieces, flow 18 carat solder on their inner surface and solder them to the original band into their respective positions; then I trim the bands down as much as is proper and place them over the teeth in the mouth, take an impression and proceed as usual in bridgework. This method will give you a strong, stiff, band which will not stretch. The soldering together of the two surfaces prevents the solder from flowing on the inside of the band if sand and plaster should contract, thus insuring the same fit as obtained when dried and burnished in the mouth. Of course such a band shows a cuspid of gold, but if nicely done will show no worse than a good sized gold filling.

In bridgework it is impossible to construct a strong denture without showing any gold whatever, and the feeling against it on the part of the patient must be overcome, or else the operation had better be left undone. A person who saw fit to carry decayed teeth until they were to be extracted ought not to be so fastidious about showing a little gold. On a bicuspid tooth I bring the band over the inner cusp of the tooth even, and of course a narrow strip on the labial surface. Such bands are much more sightly than the big gold tubes we see so frequently. They leave the labial surfaces exposed, and, if they are carefully constructed and neatly fitted, they look better than most of the large gold fillings which often have the appearance of being thrown upon the tooth instead of fitted into it. You will probably say that the cement will wash under the bands, and then what? Well, what of it? If the bands are well fitted, a good cement will wash very slowly. If the cement does wash out, or disintegrate, then it is but little trouble to take down the bridge, polish it and reset. If such would have to be done once a year it would be, in my opinion, exceedingly beneficial for the piece to be boiled out and reset, and if the teeth have been properly shaped there is but little trouble to remove it, by inserting a fine steel instrument between band and tooth thus disintegrating the cement left. Of course, if a shoulder is left at the neck of the tooth there will be trouble to remove the piece, for the cement between tooth and band at such shoulder will not pass by the close-fitting, cutting or grinding edge.

In the worst cases a slit on the labial side will insure an easy removal and the cut can be soldered again easily. I have inserted such bands carrying a bridge for over five years and the work is to-day as good as when first set. A very few I have taken down and reset after about two years wear. When I have a pulpless molar stump and a sound cuspid, I crown the stump and then make a band over it and for the cuspid. I have banded on to good front teeth, reserving their being cut off for a future possibility. Indeed there is hardly any combination that cannot be executed by this method.

No case of bridgework should be accepted without a thorough study of it, and a thorough understanding on the part of the patient of the possibilities that may result. I never care to give an immediate opinion to my patients as to the advisability of bridgework, I prefer to tell them that I will think over the case, study it, and then render my opinion. Different conclusions are often arrived at after giving a case, especially a difficult one—a careful study. Your patients will have more respect for a course thus pursued, than by being ever ready with a hasty, immediate, judgment.

With regard to the bridged teeth themselves I will not go into any details of their construction ; there is plenty of good book information on that subject. I simply wish to state that

I prefer to set the edges of the faces directly and firmly against the natural gum, rather than to have them so-to-say hung in mid-air.

It is surprising how the gums will close on to it. I have never yet observed any uncleanliness under such edges. In fact I have inserted several pieces, to which I baked the gum and set them directly on to the natural gum, occupying about three lines of it along the side. If properly done, so as to insure an absolute fit, I am slow to believe that anything unclean will be the result. The cases thus inserted are recent ones, and are to some extent experimental. I believe they will be a success and that the natural gums will close on or over the edges of the work, so as to render it impossible for anything to collect under it. The comparison of matter accumulating under a plate, which is more or less loose and moveable, does not hold good in a case of bridgework, where the piece is held rigidly and immovable against the gums. However time will show. It is the duty of every operator to try and improve his methods, for the benefit of his patients, himself, and the profession. Failures may be the result, but if we all try honestly to make bridgework what it may and should be, I firmly believe it will prove a boon, to our patients, to ourselves, and to the profession.

SOME RESULTS FROM THE USE OF IODOFORM.*

By E. B. Davis, D.D.S., Concord, N. H.

Iodoform is a yellowish powder of an unpleasant odour and sweetish taste. It is not readily soluble in water, but is in ether, fixed, and volatile oils. It is obtained by the action of chlorinated lime on an alcoholic solution of iodide of potassium, and its chemical formula is CHI^3.

In the treatment of many of the disorders coming into the hands of the dentist, remedies of certain medicinal properties are requisite, prominent among which are non-irritants, disinfectants, antiseptics and anodynes, and Prof. Gorgas has attributed to iodoform all of these medicinal qualities in a more or less degree. Miller places iodoform fourth in his list of antiseptic agents, and no doubt it is entitled to that position, for it contains chemical properties of both of the preceding antiseptic agents, viz., peroxide of hydrogen and iodine; and of the ten such agents that he names in the order of their importance, iodoform alone is in that form in which it can be used as a solid, and in this respect it is of great value to the dental practitioner in the treatment of certain cases when prolonged action of the remedy is required.

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* Read before the Vermont State Dental Society, March, 21, 1889.

It was first brought to my attention by a physician to be used in a case of diseased antrum, but after that was cured, it remained in my office for several years unused, till within a year or more I find myself using it as frequently as any remedy I have in my case.

At the present time when nearly the sole object of our work is the prevention of the growth of fungi, it seems to me that we have in iodoform a most valuable agent for producing this result. The cases where it is in my opinion of very great value, are the ones that come into our hands very often, and from the complexity of their circumstances often try our skill and patience, and I find that such good authorities as Prof. Gorgas and James Truman recommend iodoform for us in cases of from slight exposure of the pulp, to a chronic discharging abscess.

I have in my practice of ten years adapted very various plans in treating these, sometimes very obstinate diseases, and what brought iodoform to my mind in these cases, was a knowledge of that fact that iodine would in many cases accomplish what I desired, if it could be retained in position long enough for effect, and the effect I wanted was to destroy a partially devitalized pulp or heal a discharging abscess, and I thought if iodine would in many cases do this, why would not iodoform which gives off free iodine, accomplish these results in the same manner, and from this thought I commenced my experiments with this drug.

We are all subject to peculiarities in our practice, and it only remains for each of us to find means of escape from them, or rather means of treating them. What to one practitioner is of no great account and is taken care of in an easy and simple manner, is to another a source of considerable trouble, and *vice versa*, and by what means we can use to make our path easier for ourselves and better for our patients, are in the words of the immortal Flannagin, " What are we here for " to-day, and as far as I am concerned I will agree that I have as many trials as any one, and will also say that iodoform has helped me through many of them in a very agreeable manner.

A child appears with an exposed pulp in a sixth year molar which from irritation is inflamed and very painful. Perhaps the child is not old enough for the apical foramen to be formed, and when it would not be wise to use arsenic in any form. Of course we all have very good methods for this class of cases, and I only with considerable hesitancy bring in mine, if it is new to you, and only add my testimony to yours, if you pursue the same course of treatment.

I think that this pulp should be capped, and I have regard for every one's opinion in relation to capping pulps. I proceed as follows: As all good dentists do in such cases, I prepare the cavity as carefully as I can, I like to expose the pulp if the decay is very soft in its vicinity, and if I get a drop or two of blood I think it beneficial rather than otherwise. I keep the cavity washed out with warm water and carbolic acid and see that everything about the cavity is clean before I commence to apply the filling materials. I do not see the justice of using any of the acid preparations on account of their liability to irritation, and for these cases I have Weston's non-irritant cement, which is simply a white powder to be mixed with water, and into this I mix iodoform powder in proportion as I think the case requires, and if the pulp has been very painful, oil of cloves and creosote in equal parts may be added, or a drop of eucalyptus oil if septic tendencies are indicated.

The cavity being as dry as possible, this is thoroughly mixed and placed in the cavity to cover the pulp, or what remains of it, or the entrance to the canals if they are open. Cotton may be used to absorb any free moisture, and in a minute or two the cavity may be filled with oxyphosphate and the patient dismissed with instructions to return if soreness appears.

In treating this class of cases which comes to us so often through the ignorance of the parents in regard to the stability of the sixth year molars. I have found this method painless and one that has given me a great deal of satisfaction. In the few months that I have practiced this mode of treatment, I cannot recall a case that has returned for further treatment. And as the progress of decay has been in the cases, I have used this method from a condition when only irritation of the pulp has taken place, to a partial death of it from long exposure, and if we can, as I think you all will, accord the results of this practice to the iodoform used, we will find it demonstrated to us that the anodyne, antiseptic, and disinfectant properties of this drug are true, and if true, should it not receive our commendation? The use of this method is not confined to children or even young people, but circumstances are continually appearing when it can be used with ease to the dentist and comfort to the patient. In cases of pulpitis, either slight or aggravated in form, when from the want of time on the patient's part, the pulp cannot be destroyed, and the cavity properly filled, this treatment will carry them for several months painless, much gratification of both parties interested.

I have always been opposed to the application of arsenious acid to a pulp if it shows indication of inflammation, till such inflammation had wholly, or in a measure subsided, or had for two or three days remained painless. And I have found iodoform used in connection with equal parts of oil of cloves and creosote, from the almost universal benefit derived from its use, as near a specific, in such cases, as we can hope to find. In fact I cannot imagine anything that I could use easier, the only fault of it is the odour, and that in a measure can be destroyed.

Now I suppose I ought to say something in regard to the final results of this treatment of exposed and inflamed pulps. From the short time I have practiced this method I am not prepared to give my statement in regard to these pulps, as I cannot recall any case where I have continued the treatment to a final filling of the pulp cavity, as I expect to in nearly if not all the cases. But my theory is that in all the teeth where there was much exposure and irritation of the pulps, they will die, and why should I not expect to find them dead if my theory in regard to iodoform be correct, and iodine will in time devitalize a pulp? I expect to find them dead, if not I shall be very happily disappointed and have a still stronger faith in iodoform. Furthermore, I expect to find the tooth thoroughly disinfected and in a condition for immediate filling.

I may be wrong in my conclusions in this regard and further treatment may be required. I shall take notice of the future progress of these cases with great interest, and hope to report the results at such a time as they are assured.

I do not stop here with the use of iodoform, for occasionally other cases present themselves when I find it of great service. and that is in the treatment of those conditions of periosteal disturbance attended with discharges through the gums, either from one or several sinuses, a sort of weeping of pus through the mucous membrane, which indicates a disease of long standing and chronic in its character.

Although I have healed many of these cases previously to my use of iodoform, the application of this drug has simplified the treatment to a considerable degree.

If the pulp cavity and canals can be opened up and washed out with a weak aqueous solution of carbolic acid, and packed with cotton dipped in oil of cloves, and creosote and iodoform, sealed up and as far as possible left undisturbed, the result will be almost magical, and still further in those cases I have sometimes, in fact very often, applied iodoform in the permanent filling of the root.

Without any discussion in regard to root filling, I will simply state that I use in some cases a solution of gutta-percha and points of the same. In the solution I incorporate iodoform powder which is readily taken up by the chloroform, and this is applied to the roots and the filling completed after the manner of the case in hand. And it has been with great satisfaction that I have seen chronic periostitis heal to entire insensibility to pressure, either to the teeth themselves or to the alveolus over the roots.

Perhaps I have in some cases expected more of this treatment than I shall realize as the cases continue, and many times I may fail to accomplish my object at all, but I cannot look upon a failure, or two or three failures, as establishing the fact that it is all wrong, and cast it aside as useless, but if I think there is merit in any line of treatment that is brought to my attention I thoroughly test it, to find if those merits do exist, and we are all able to judge more or less quickly on those points.

As " one swallow does not make a summer," one success or failure will not establish any fact in regard to the value of this or any other mode of treatment, and one judgment should not be founded on a small number of cases.

Idiosyncrasies appear to us as to the physician, and should receive at our hands such treatment as in our judgment is best for the condition.

The best and really only way is for us to make a study, as far as our faculties will allow, of each case that comes to us for relief, and not expect that one mode of practice is all that is necessary for all the varied and complicated conditions that may come into our hands for treatment.

And though I may have spoken rather enthusiastically of my results with iodoform as far as I have been, a continuation of the use of this drug may give me results that will very materially change my course of treatment in some cases. And I expect to learn from some of you of benefits to be derived from the use of this drug in other ways than mine.

In conclusion, I will say that I have been using iodoform for more than a year and obtaining the results spoken of without examining the authorities in regard to its properties, and to ascertain if I was alone in its use and was only obtaining results with it that others got from different methods. But in a research among such books as I had at hand, *American System of Dentistry*, *Dental Medicine* by Gorgas, *Stockton's Dental Medicine and Cosmos*, I found iodoform highly recommended for such cases as I have used it in with apparently good results, and I expect to further accomplish myself in the use of this class of drugs, which are at present receiving so much attention from all branches of the medical profession.

SIXTH YEAR MOLARS.

By Charles Barnes, D.D.S., Syracuse.

I think it will be freely admitted that these teeth, at times call forth about as much patience on the part of the operator and patient as any class of teeth. Perhaps one of the fatal causes to these teeth is the ignorance of the parents of the little sufferers, who pay so little heed to them, thinking them to be deciduous. I have always taken great pains to educate parents in this respect, and I think with good results. The children whose deciduous teeth require care, before the eruption of the sixth year molars, generally receive better care of the latter for the reason that I have then good opportunities from time to time to impress on both parent and patient, the importance of watching their mouths at the time of eruption and years afterwards. It is often hard work to fill the sixth year molars, owing to the size of the mouth, moisture, and nervousness of the patient, and consequently some very poor work is done. When I have patients of this class, I can generally manipulate Hill's stopping about as rapidly as anything. This will preserve the tooth for a long time even though in the grinding surface, and should it wear out it can be added to until you can get the confidence of the patient to allow you to put in something stronger. The material I prefer then is tin. I am not one of those dentists who believe in never extracting the sixth year molars, but I am strenuous to preserve them until the development of the bicuspids are such that they will not shift. It oftentimes requires considerable patience to keep them in, but with the help of the patient and parent it can be accomplished. I am now speaking of a low class of structured tooth that has advanced considerably before reaching the hands of the dentist, but even then, if taken in time, a great many can be saved that are extracted. When it has been decided to extract a sixth year molar, many dentists advise the loss of all four, that the twelve year molars may come in even. I think it best to be governed by circumstances in this respect, taking into account the structure of the remaining teeth, also the regularity of the anterior ones.

If the dentist has care of the patient at the time of the eruption of these teeth, I think they should never have to be extracted, especially if the patient takes any sort of care of the mouth when out of your hands. The February number, 1888, of the *Independent Practitioner* has a good article by Dr. G. W. Weld on this subject, and he concludes as follows:—" In conclusion, it may be said of the sixth year molar. 1st, Its title to longevity can only be questioned under neglect and abuse. 2nd, it is the keystone molar ; with it the integrity of the arch is preserved ; without it the usefulness of the arch is impaired if not destroyed. 3rd, its extraction at an early period signifies a loss of masticating surface that is absolutely detrimental to the health and comfort of the patient in early life. 4th, in view of the prominent position it occupies in the arch, and its relation and influence as a just poise or balance in the distribution of the varied strains incident to mastication, its extraction can only be considered a physiological mistake."

OBTURATORS.*

By James Louis, D.D.S., Burlington, Vt.

In my paper to-day, I shall not take up your time in describing the defects in the palatine organs, as you will find that part of the subject described in the various books and journals.

I shall merely describe the various processes, first, how I took the impression of the parts, then the various processes in making the plate and "uvula."

The case which I shall describe was congenital.

I took the impression of the jaw and hard palate in wax, cut off the wax which pressed up into the nasal cavity, then set in plaster, from which I made a trial, in wax, which would reach back just to the junction of the hard and soft palate, I then made a gold hinge, almost as wide as the fissure or cleft in the palate. The ends of the hinge I made a little over a quarter of an inch long, punched three or four holes in each end, so that it would hold secure in the rubber when vulcanized. Then I set the trial plate in plaster with one part of the hinge secured in place by a wire running through the hinge, with the end set in the plaster. After vulcanizing I finished the plate and fitted it to its place in the mouth. Then I attached the other part of the hinge, to that vulcanized in the plate. To this part of the hinge I attached a *very thin* piece of brass plate, which I made to project forward far enough to prevent the back part from falling on the tongue. This strip of brass I bend just the shape I want the lower surface of the uvula. This strip of brass I covered over with a very thin sheet of gutta percha, which I made just the width and form that I wanted for the lingual surface of the uvula. After forming this I placed cotton on the upper surface and worked into the form as near as possible which I desired, then covered this cotton with a very thin coating of wax. This cotton and wax I formed so as to project over the superior surface of the velum, or palatal muscles. This must be done with care. I also made a slight projection on the under surface. I endeavoured to make all as light as possible, and by laying it in the mouth and changing it where necessary and talking with my patient, until everything was satisfactory, I removed all from the mouth and withdrew the pin in the hinge to separate the parts. Then set this model in plaster, with the lingual surface up, also run a wire through this part of the hinge in order to secure it in the plaster. This should be done to secure the exact axis of all, or both parts when finished.

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* Read before the Vermont State Dental Society, March 21, 1889.

After separating the plaster cast, remove wax, brass, etc., then take very thin sheet of gray rubber—as this is much lighter than other rubbers—cut in sections to fit every surface around this cast. The rubber over and under the palatal muscles and about this part of the hinge must be thicker, in case it should need slight changes after finishing. Secure all parts of the rubber together, then put in two or three drops of water, place the last covering of rubber in place and screw the flasks together and vulcanize. After finishing this part, I secured the parts together with a gold pin.

If care is taken during all the manipulations, everything will result well, and need but very little changing. It will be necessary to place a spring on the upper surface of the plate, and a staple in the uvula just back of the hinge, to prevent the uvula from falling on the tongue, but made so that the levator palati muscles can move this artificial uvula with ease.

Reflections from the Surgery.

NOTES OF A CASE OF MALIGNANT DISEASE OF THE ANTRUM.

By A. H. Smith, L.D.S., House Surgeon, London Dental Hospital.

W. W., male, age 42, a confectioner, came to the hospital for advice concerning a large swelling of the right superior maxilla.

Past History.—Patient had suffered many years ago from small-pox, had never had syphilis, nor was there any hereditary predisposition for cancerous or other new growths. He does not remember ever having received a blow on his face, and cannot account for the tumour at all.

Present History.—Last June, patient first noticed that his expectoration was tinged with blood. This was found to come from a superficial ulcerated surface in the sulcus, between the cheek and gum of right side. The first molar had been just recently extracted. It was very carious, and had a sharp ragged outer edge.

About four months ago the cheek began to swell a little. It slowly increased in size, and the pain was very variable, but was never very severe. The opening of the antrum into the right nasal fossa became occluded about five weeks ago, and the tumour blocked up the whole of the nares, and at the same time he became deaf in the right ear. He has lost about one stone in weight during the last year.

Examination of Face and Mouth.—The face is pallid and thin, the malar prominences are well marked on both sides, especially the right. There is a soft, semi-fluctuating swelling on the right side of the face, about the size of a Tangerene orange which distends the right cheek. It is growing down into the mouth, and can be seen chiefly on the outer side of the alveolus of the upper jaw, but this is also very much thickened. The hard palate is pushed down slightly on the right side.

He cannot blow through the right nostril. When a watch is held to the right ear, it can be heard ticking four inches away, held at a distance of two feet on left side it is plainly heard. The surface of the tumour is ulcerated, and is covered with "cauliflower excrescences." The second molar is lying flat on the surface, the crown looking towards the front of the mouth, and the roots directed backwards. The wisdom cannot be seen. At the back part of the alveolus, several sinuses can be seen. These penetrate the growth, and a probe passed through them pierces soft tissue, and finds its way into the antrum. One sinus is situated in the hard palate, one in the alveolar wall, and one in the growth itself. There is some suppuration going on round the second upper bicuspid root. A sense of fluctuation can be made out, with some amount of distinctness, through the walls of the alveolus. There is no orbital involvement.

Mr. Hern saw the case, and pronounced it to be malignant disease. The patient consequently was taken to Mr. Bellamy, of Charing Cross Hospital, who, on Thursday, May 16th, removed the superior maxilla on the right side.

The growth was very large, and extended backwards almost to the base of the skull. Microscopic examination revealed the growth to be a round-celled sarcoma, which involved alike antrum, gum, and cheek tissues.

IODISED PAPER FOR ANTISEPTICISING CANALS.—In a communication addressed to the Société des Pharmaciens de la Côte d'Or (*Répertoire*, May 10, p. 207), M. Eymonnet suggests the use, in the place of iodized cotton, or applications of tincture of iodine, of a preparation that he calls "papier iodogene," which, when moistened with water, disengages iodine in the nascent state. The "papier" consists of one sheet of paper impregnated with a mixture of potassium iodate and tartaric acid, and dried, and another steeped in solution of potassium iodide and dried. Between these two a thin sheet of paper is placed, and the three are stuck together. When required for use the "papier" is moistened and applied with a covering of sheet gutta percha. The tartaric acid attacks the potassium iodide, liberating hydriodic acid, and this reacts with the iodic acid from the iodate, setting free the iodine. The reaction is said to go on without elevation of temperature, the sensation of warmth experienced being due to the revulsion set up by the nascent iodine. This gradually becomes more accentuated, but is tolerable for the forty-five minutes during which the reaction lasts, by which time the originally blackened paper has become of a straw yellow tint. The use of this so-called *papier iodogene* for rendering pulp chambers and root canals aseptic will at once suggest itself to dentists. We have at the same time material easily applied, and capable of a very wide range of utility.

British Journal of Dental Science.

LONDON, JUNE 15th, 1889.

THE COCAINE HABIT.

The literature which is springing up, and has indeed already sprung up about that delectable plant, the erythroxylon coca is phenomenal. Unfortunately, this literature discloses to us that, what was at one time regarded as an unmixed blessing, is not only a most active poison, but possesses besides its powerful cardiac influence, a further and even more fatal power for evil. Like chloral, morphia, opium, and alcohol, cocaine soon becomes a necessity of life to those who allow themselves to grow accustomed to its influence. The pleasant dreams, the freedom from physical pain which, a hypodermic injection of cocaine brings about, have rendered the drug a favourite one for self-indulgence; and, unfortunately, we learn that while cocaine habitués are more easily made than are either opium habitués, or those addicted to strong drink, yet are they far less easily cured of their habit. It is unquestionably a very grave responsibility resting upon us as dentists, if we lightly run the risk of inducing patients to fall under the baleful influences of the cocaine habitude. Cases are recorded of persons who for some trivial operation in dentistry, received a hypodermic of cocaine, and became so agreeably impressed by the sensations the drug gave rise to, that they pocured a supply, and commenced the process of self-injection, with the result that ere long they were so entirely given over to its dominance, that life without its solace possessed no pleasure for them. Now the physical changes induced in the tissues of those who have become cocaine maniacs, are very pronounced, and the symptoms induced differ sufficiently from the transient results of acute poisoning from cocaine to make it worth while to dwell upon them. After a fugitive improvement in health, a sense of well-being and ability for physical and mental work, and a corresponding improvement in muscular vigour, there comes a period of ever-increasing bodily lassitude. The tissues waste until the individual is reduced to an extreme degree of enfeeblement, the skin grows dry and harsh and discoloured. The mental faculties become dulled and all mental effort is too much, the power of wil appears to be lost, and, save for the ever increasing craving for the drug no distinctive ideation remains possible. Thus, professional men, the victims of the drug, throw up their professions, resign all their home, and other duties. There are usually more or less pronounced hallucinations, and the cocaine victim is practically a person of unsound mind who is alike unable and even unwilling to carry out the conduct of his life's duties.

Now that morphomania is so well known it becomes always a grave question in the mind of a medical man whether he is justified in resorting to hypodermics of that remedy, but it is a regrettable fact that although the mania produced by cocaine is now well substantiated, yet little if any caution is used before resort is had to it for anæsthetic purposes. There certainly is a very grave responsibility resting upon the shoulders of those who, without due and wary caution, employ cocaine, lest they may initiate a habit which once yielded to, must prove the ruin, mental moral and physical of its victim.

Unfortunately, it is of no use to say that when small doses are used, no untoward result is likely to accrue, for it is the small doses, which yielding the pleasant semi-intoxication without the unpleasant faintness and depression more liable to follow large doses, induce the patients to use the drug secretly for their gratification. We have already said that the habit once established is almost always incurable. The unwise shrieks which accompanied the introduction of cocaine, and which served only too well the end of filling the pockets of the factors, have given the laity a wholly fallacious impression of its merits, while they know naught of its dangers. Surely doctors and dentists owe it to their patients to warn them off the grave dangers connected with the indiscriminate use of the drug.

CRYSTAL-FORMING MICRO-ORGANISMS IN THE HUMAN MOUTH.—An important communication was made before the Odontological Society at its last sitting: Messrs. George Cunningham and Robinson, of Cambridge, have observed that when micro-organisms from the human mouth are introduced into nutrient gelatine, or cultivations in agar-agar, crystals form in periods varying from 2 or 3 days to as many weeks. These crystals take the well known form of the double salt of ammonium magnesium phosphate, and upon analysis are shown to be actually composed of that material. The observers think that the micro-organisms have the power of forming ammonia, and that this combination with the magnesium phosphate existing in the nutrient cultivation medium form the salt. They believe that their discovery, of which the note is but a preliminary notice, will elucidate the formation of dental tartar, and other concretions found elsewhere in the human body.

THE GUY'S HOSPITAL DENTAL SCHOOL.—The first syllabus of this School has been issued and is in our hands. The dental staff consists of one dental surgeon, Mr. Newland-Pedley, to whose enterprise the school owes its origin, and six assistant dental surgeons, one of whom, Mr. Maggs, is elevated to the distinctive position of Senior assistant dental surgeon. Of the remaining five, three officers hold the L.D.S. only, while two also have the membership of the College of Surgeons. The lecturers are five in number, Mr. Newland-Pedley undertaking Dental Surgery, Mr. Maggs, Dental Anatomy and

Physiology, while Dental Mechanics are dealt with by Mr. Richards, Metallurgy by Mr. C. E. Groves, F.R.S., and Mr. Tom Bird undertakes to instruct in Anæsthetics; Drs. Cock and Silk are responsible for the Anæsthetics, and Mr. Mansbridge demonstrates upon Dental Microscopy, leaving tutorial duties to Mr. Wynne Rouw. The lectures are fixed for four o'clock in the afternoon, while dental practice can be studied in the morning. There is accommodation for eighteen Dental chairs, and three chairs for extraction cases. A wide range of study is recommended, as we believe a special feature of the School is that Dental Students may be induced to go on to the membership.

RASHES FOLLOWING THE USE OF COCAINE.—Among the many unpleasant symptoms which have up to the present time been brought on by the use of cocaine, a novelty has recently been reported, viz., a severe attack of urticaria (Temp. 105°F) following the injection of 5 drops of a 10 per cent. solution.

DENTITION IN UTERO.—Mr. Henry J. Buck writes, "An infant a fortnight old was brought to my surgery by two gipsies, who had been born with two upper incisors fully developed, which prevented its sucking, and had also produced ulceration of the mucous membrane of the lip. After extracting the teeth, I told the gipsies I would keep the teeth as my fee, and they departed. In half an hour afterwards, however, a numerous deputation from the camp arrived, saying that I might charge what I liked, but that the teeth must been given up, as the former possessor of them was the offspring of the 'Queen' of their tribe, and they were to be kept as heirlooms. So I had to resign my specimens."

MR. BENTHALL, a surgeon, of Southsea, reports also the case of an infant who, like Richard III., was born with a fully erupted incisor tooth.

THE ANTISEPTIC POWERS OF AMMONIA.—Some years ago Dr. B. W. Richardson, called attention to the antiputrescent properties of ammonia. Dr. Gottbrecht, of the University of Greisswald, has repeated the experiments, with the result of practically confirming all Dr. Richardson's statements (*Arch. exp. Path. u. Pharm.*, April, p. 385). After some preliminary experiments, in which animal matter placed in 5 per cent. ammonia solution was found free from putrescence after nearly two years, ammonium carbonate was used in the place of the free alkali for the sake of convenience. The first experiment, made with the washed intestines of freshly-killed pigs, showed the power of ammonium carbonate to retard putrefaction to be directly dependent upon the concentration of the solution, a 1 per cent. solution retarding it until the third day, and a 10 per cent. solution until about the sixtieth day. When added to gelatine in which putrefaction had already been set up by inoculation it was found that a 5 per cent. solution so modified the conditions that the putrescence ceased, and a 2½ per cent. solution inhibited the development of bacteria, so that the liquefaction of the gelatine was practically stopped. Other experiments showed that in an atmosphere impregnated with ammonium carbonate meat could be kept for six months, and at the end of that time remain nearly unaltered. Dr. Gottbrecht also discusses the conditions under which products of putrefaction may act prejudically to the originators of the putrefaction. This he believes to be due to a toxic action dependent on the degree of concentration. He points out that cadaverine, a product of decomposition of a cadaver, in certain degrees of concentration acts as a direct poison upon the abscess coccus, and he concludes that, similarly, all products of tissue change in living organisms can become noxious to their originators as soon as their quantity exceeds a certain limit.

TEST FOR LEAKAGE.—Fill a small glass test tube with amalgam just as you would a cavity in a tooth, and drop it into a bottle containing an alcoholic solution of red aniline.

For destroying Pulps of Teeth.—The *Dental Review* gives the following formula.

R Arsenic Acid	gr. xc.
Hydrochlorate Cocaine	gr. x.
Iodoform	gr. vii.

Oil of cloves add q. s. to form a stiff paste.

R Acidi Arseniosi	gr. xc.
Cocainæ Hydrochlor	gr. x.
Iodoformi	gr. v.

Ol. Cassia q. s. to form a stiff paste.

Apply $\frac{1}{60}$ gr. to the pulp, and allow it to remain 48 hours. Always seal the cavity with gutta-percha. When the dressing is removed, keep the cavity dry. Wash it with dialysed iron, puncture the pulp and apply alcoholic sol. of tannin. Seal the cavity for eight days, when the pulp may be removed painlessly. The root may be filled at once, if nothing has been allowed to get in the cavity during this time.

For use in a Sensitive Tooth.—

R Hydrochlorate Cocaine	gr. x.
Melted Carbolic Acid	gr. xc.

M. Sig. Use in a sensitive tooth, previously drying the cavity and heating the liquid.

Limpid Copal Solution fr Microscopy.—Dr. Techinker says that if a high grade of bright copal is chosen, the product will be perfectly limpid and almost colourless. By sorting the copal, a solution as limpid as water may be obtained: Dissolve 4 parts of camphor in 48 parts of sulphuric ether, and add 16 parts of pulverized gum copal thereto. Cork the flask carefully, and stand aside with occasional agitations until the copal is partly dissolved and partly swollen to its fullest extent. Then add 16 parts of alcohol of 96 per cent. and 1 part of rectified oil of turpentine, and agitate thoroughly. Let stand with occasional agitations for several days, and at the expiration of a week or so, the contents of the flask will be found to have separated into two layers, of which the lower is rather dark, thick, and possibly dirty, according to the quality of the copal, but above this a layer will be found rich in copal and as clear as crystal itself. The lower layer may be further treated with camphor and sulphuric ether, and afterwards with alcohol, and made to give a still further yield of the crystalline fluid. The only objection to this solution of copal is that it is somewhat brittle when dry. This may be obviated by adding a few drops of purified nut or poppy oil thereto.

THOUGHTLESSNESS IN DEALING WITH PATIENTS.—The following extract is a fair sample of the absurd way in which some dentists leave their patients in the dark about the details of treatment which they, the patients, are supposed to carry out for themselves. It is all transparently clear to the dentist but clothed in the darkest of dark ideas in the unfortunate patient's mind. The following directions were given to a *patient* by a dentist who was treating an abscess of the antrum ! "Inject thoroughly with peroxide of hydrogen, then touch up with bichloride of mercury, 1-500, then take a small wad of cotton saturated in solution of aconite and iodine covered with iodoform and place in wound."

IODOFORM OIL.—If amorphous iodoform is well shaken up in 10 parts of oil of Lavender a fine emulsion is obtained which is both effectual as a antiseptic and is fragrant and keeps for a considerable time.

TO FILL a large buccal, or labial surface cavity, in any of the teeth, cut a piece of gold plate just to fit, solder a couple of platina pins on the back and insert with cement. If an unsightly seam occurs, you can, at the next sitting, take a small drill and cut out enough to secure a mechanical finish with gold filling. Where a tooth is nearly eaten off, a collar may be made to surround the tooth, cemented on and finished as above.

Abstracts of British & Foreign Journals.

INTERNATIONAL DENTAL JOURNAL.

THE ADVANTAGES OF COTTON AS A ROOT CANAL FILLING

By Joseph Head, D.D.S., Philadelphia.

It is said that the cotton used as root-filling materials is prone to absorb fluid from tissues around the apex of the root, which fluid, undergoing decomposition, was likely to cause alveolar abscess. This statement Dr. Head challenges. He proceeds to consider the treatment of bicuspids and molars. A tooth containing two or three canals is two or three times as likely to give trouble as a tooth which contains but one. Discussing the method of filling root canals solidly with gold he suggests that while enlarging the canals sufficiently for the complete accomplishment of this design, there would be danger of boring into the alveolar process, the blood thereby spoiling the perfect adaptation of the gold. There being no method of venting the tooth, would there not be a risk of alveolar abscess with all its horrors? Another plan is after sterilizing the canals, to pump into them gutta-percha dissolved in chloroform, and then packing the root with gold, a filling it is stated is made so impervious to fluids from without, that alveolar abscess is a practical impossibility. This method although plausible, is yet open to objection. The gold, occupying the position of an inert mass, could only serve to block the canals, should trouble arise. While all the responsibility of excluding noxious fluids was given to gutta-percha, the real strength and toughness of which had been destroyed by the chloroform. Dental gutta-percha is porous, and so does not make a water-tight filling. The advocates of the so-called permanent root fillings, gold, gutta-percha, and cement, claim that these agents absolutely exclude putrefactive germs. And, moreover, the root being sterilized previous to filling, that these materials so protecting it will soon make alveolar abscess one of the lost diseases. Are these statements borne out by facts? Do not these fillings contain all the disadvantages which have been attributed to cotton? It is said that cotton is not water-tight. Are the other materials water-tight? It is said that it absorbs fluid which, decomposing, gives rise to irritating vapours. Do not gold, gutta-percha, and cement also give rise to irritating vapours? But the great advantages of cotton dressings have not, he contends, been justly rated. 1st, it can be easily removed. 2ndly, it can be thoroughly permeated with medicaments which will not only destroy septic matter, but prevent its entrance. Passing to the consideration of cotton as a medium for antiseptic medication, he recommends that a cotton dressing should be soaked in carbolized cosmoline. The use of cosmoline in canals was first suggested by Dr. St. George Elliot, of London. Any practical method of cleaning and sterilizing the canals can be used, but where the pulp has become putrid, he recommends to employ the gradual stopping process which is explained by Dr. Flagg. The tooth must first be opened and the floor of the pulp chamber so burred that the mouths of all the canals visible or invisible shall be exposed. Then if considered practicable they can be enlarged, extreme care being taken not to puncture the cementum. At the first sitting all the decomposing material that can be reached should be removed. And after the passages have been thoroughly washed by streams of warm water squirted into them from the syringe, they should be dried and protected by the napkin, or dam. Finally filled loosely with a cotton dressing thoroughly soaked in pure carbolic acid, or whatever medicament may be preferred. This should be done early in the morning. The advantage of choosing such an hour has been known to dentists for a long time. The velocity of the blood is greatest at nine o'clock in the morning and six at night. Its ebb tide is about one p.m. and at midnight. When the rapidity of the blood is increasing, any irritation will end in inflammation much more readily than when the velocity of the vital fluid is on the ebb. Therefore, judging from this fact, were we so inclined we could treat teeth with equal advantage, at six or seven p.m. On the following day the syringing and replacing of the dressing should be repeated, the dressing being packed a little tighter. This should be continued each consecutive morning until twisted cotton, soaked in carbolic acid, can be firmly packed into the canals and there remain, the tooth being absolutely free from inflammation. Extremely sensitive teeth with open canals have yielded to this treatment again and again, becoming sound and painless in a few days. Should the tooth resist the first treatment in the morning, allow cotton to rest in the canals very loosely, and tell the patient to return at eleven, when the treatment again being performed, the pain will, in almost every instance abate. By this method the hair-like canals are perfectly cleansed, for the organic matter putrifying in them is each day washed out, while each cleansing is followed by an application of carbolic acid, which if the tooth is dried, will go into places inaccessible to cotton. This being accomplished and the last dressing allowed to remain, the tooth should be temporarily filled with gutta-percha, or cement for a length of time sufficient to test the thoroughness of the work ; which having been satisfactorily demonstrated the tooth may be permanently filled. Put on the rubber dam, remove dressings and blow hot air into the tooth until it becomes painful. Then, using a hypodermic syringe filled with warm carbolized cosmoline, pump the canals full. In dealing with the large canals this will be an easy process. In those of a small diameter the passage of the cosmoline to the apex will be aided not only by capillary attraction, but also by the contraction of the cooling air. By finally pressing a pellet of cotton soaked in cosmoline over the small orifices, and then inserting a minute shred of cotton wherever possible, it seems reasonable to suppose that the canal can be filled to the apical foramen, with an antiseptic substance sufficiently viscid to exclude moisture from without. Cotton should then be packed in the large canals to act as a support for the medicament. The canals should be filled with cotton to the pulp chamber, and a small pellet soaked in cosmoline placed over the orifices of those which are too small to allow the entrance of a thread. The cavity should now be washed with chloroform to remove superfluous grease, and the pulp chamber filled with gutta-percha, or cement. Connect the mouths of the canals with protected cotton in order to expedite venting, should it be necessary. The filling to be used in covering the contents of the pulp chamber, of course, must vary according to the individual peculiarities of the tooth. How is it possible for a tooth thus treated to need venting ? Because in every case there is a strong probability that the outer portion of the apical foramen may be unprotected, and, moreover, the place where the living and the dead tissues join is always a weak spot. And after all has been said and done, and the greatest care has been used, a gouty, lymphatic or plethoric patient may most unexpectedly give us a very serious example of periodontitis.

THE DENTAL REVIEW.

BLEACHING TEETH.

By Garrett Newkirk, M.D., Chicago, Ill.

Bleaching.—In dentistry bleaching means to remove an accidental discolouration, and restore the organ as nearly as may be to its natural colour.

The Discolouration.—The primary agent of discolouration is chiefly sulphuretted hydrogen. Whenever a pulp dies there is death of all organic matter connected therewith in the substance of the tooth. The *amount* of matter will depend upon the age, temperament, heredity, which determine the size of the pulp and density of the dentinal structure. A pulp *may* die and not become putrid. If so, no gas would be formed, and no discolouration take place. This is somewhat rare. Usually, disorganization takes place with the sure evolution of sulphuretted hydrogen. If, through an open cavity of decay, the gas has free escape, but little discolouration may ensue. But if confined by a layer of dentine, or dense debris, or a filling in the cavity, or a "capping"—a frequent condition—or by the natural walls, it is forced in its most concentrated form into the minutest ramifications of the dentinal tubuli. How great this pressure may be is evidenced by the fact that teeth have been ruptured by it, and even enamel has seemed to be discoloured. The first or chief evidence of the death of the pulp under fillings and cappings is often the darkening in colour. So that, aside from the dangers of inflammation and abscess in our attempt to save doubtful pulps of uncertain value, we may remember the further danger of tooth discolouration.

Bleaching Agents.—With perhaps a single exception, bleaching agents contain chlorine. The principle has been apparently simple enough—that of decomposing the salt and liberating free chlorine in the cavity. And it has been the prevailing thought that chlorine gas, permeating the dentinal tubili was the agent which effected change of colour of the tooth. The bleaching properties of the hydrogen peroxide was not discovered by dentists. They have been known and largely applied in commercial arts for many years. Of the Chlorine Salts, the Chlorinated Soda would stand at the head of the list, were it possible to be certain of getting a good article. The very looseness of its chemical union which makes it desirable to use also makes it unstable as a drug, and much of that in stock is valueless to the dentist The chlorides of sodium (common salt), potassium, or aluminum, are any, and all available. Dr. Cushing, who has had good success in this line of work generally uses Labarraque's solution. Dr. Harlan recommends the salt of aluminum.

Conditions of Success in the Use of Bleaching Agents.—First, *isolation* of the tooth throughout the whole time of treatment. It is a slovenly thing, to attempt any treatment which has to do with the pulp-chamber of a tooth without the protection afforded by the rubber dam.

Mechanical Removal.—All discoloured tissue in any degree softened should be removed. This often reaches well up into the canal within the root, or far down toward the edge of the crown in incisors, and beneath the cusp or cusps of canines and bicuspids. If not removed it remains as an obstruction to translucency, and also as a source of further discolouration to adjacent tissue. The dental engine, sharp burs, and excavators, adapted to reach every point that needs reaching, must be used till we have the unmistakable sense of touch and sound characteristic of hard tissue. It is often wise to enlarge with small burs the pulp canals nearly to the apex of the roots. Frequently the dentine is softened to a considerable extent all along their course. Thorough mechanical treatment is half the battle with a discoloured tooth. It simplifies access to the distal points of discolouration, by removing obstructions and opening up the dentinal tubuli. It makes it possible to dry the same with hot air, or the alternate use of hot air and alcohol.

TREATMENT.—First *drying*. The water is impregnated with organic matter, or the gases of decomposition. It is so much toward cleansing to vaporize this moisture, that the space it occupies may be filled with our remedies. Following upon the drying process, we may use an alkaline wash and dry again, or the volatile aqua ammoniæ, then chloroform or ether, for the removal of all accessible remains of the fats or other organic matter. Till now the whole process has been one of cleansing, so far as practicable by instrument, by air and vaporizable liquids. The process is simple enough chemically considered. It consists in decomposing a salt of chlorine by any means which will set free with promptness and energy, *chlorine gas*, in the cavity of the tooth. Before employing this agency, however, the end of the root should have been perfectly sealed by gutta-percha overlaid with a little cement. Whatever salt is used should then be thoroughly packed into the cavity, and authorities insist that no steel instrument should be used for this operation. A drop of water, or better, the peroxide of hydrogen is added to take up the base of the salt and set free the chlorine. Dr. Truman recommends dilute acetic acid (50 per cent). Some recommend electrolysis to aid in the rapid decomposition of the salt. Dr. Truman recommends that the cavity be in some way sealed and left for some hours or days. He also favours repeated operations through several weeks of time, so long as the results are not satisfactory. He proposes to defer the insertion of any metallic filling for several weeks or months, so that a new trial may easily be had if thought best. In excavating for the final filling as much of the cement should be left as may be consistent with good anchorage. The writer has tried nitrous oxide, as a drier and bleacher. He attached a piece of rubber tubing to the gas cylinder, and connected with a small glass syringe having a fine point. The gas was turned on sufficiently to make a pretty sharp current, as determined by the flame of a spirit lamp. Then holding the lamp under the barrel at a distance to heat it moderately, he obtained a continuous fine stream of warm nitrous oxide. This seemed to help considerably in the rapid dissolution of chloride of sodium; and when used alone at the opening of a large pulp canal evidently whitened the surface.

CROWNS—WHEN AND WHERE SHOULD THEY BE USED?

By C. B. Rohland, D. D. S., Alton, Ill.

This particular class of work, as now practised, is probably one of the most satisfactory. A broken-down, unsightly organ, which is frequently worse than useless, is restored to health and its original usefulness. A tooth, which, as far as service or appearances go, has been utterly lost, is called back by this method to take its place among its fellows and resume its interrupted functions. The great variety of crowns may all be divided into three classes : 1st, those which band the root, (*e.g.*,) Richmond crown ; 2nd, those which simply rest on the root, and depend on a pin or dowel to be retained in place, like the old-fashioned wooden pivot tooth, or the more modern Logan crown ; and 3rd, the combination of both. The first does not necessarily call for the destruction of the pulp, the two latter classes always do. No healthy pulp, the writer affirms, should be devitalized unless there is an absolute necessity for it. Should there a tooth present itself with a healthy pulp and root, and crown badly decayed, the filling of which would not be likely to jeopardize the pulp, this proposition being accepted, it would of course exclude a consideration of all crowns of the two latter classes, and the decision would lie between a crown of the first class or filling. If the conditions, such as position, general health, work to be performed by the tooth, appearance, etc., were such as to render filling impossible or absolutely inadmissible, then, of course, the crown would be indicated. Granting that these conditions did not contra-indicate filling, then the decision would have to rest on which would best preserve the pulp, which best prolong the usefulness of the tooth, the latter largely depending on the former. Now, the healthy condition of the periodontal membrane is also vital to the health of the tooth ; indeed, it is more important to its continued well being after maturity than even the pulp. In preparing the tooth for a crown of the first class, the natural crown must be ground down and shaped, involving considerable loss of substance covering the pulp, as well as some laceration of the gums and injury to the neck of the tooth. Fitting and setting the crown also necessitates violently driving up the band to a greater or less distance under the gum and on to the periodontal membrane, with the edges more or less smoothly adjusted. A gold band or collar, reaching just under the margin of the gums, accurately fitted to the neck of the tooth, and dressed down to an impalpable edge, will produce the minimum, and in some favourable cases a scarcely appreciable amount of irritation. The average dental practitioner only approximates perfection, more or less nearly, as conditions permit, and this "impalpable edge," in very many cases, is only beautiful theory—on paper. The conditions about the neck of a tooth that has been banded may be said to be nearly always abnormal, a condition that may often go on for an indefinite period without apparent harm; nevertheless, anything that tends to bring about abnormal conditions should be avoided if possible. In all posterior teeth, the writer believes with living, healthy pulps, when the chances are the pulps can be retained, and the crowns restored by filling, preference should be given to filling, even though it involves "plastering" the whole crown over with amalgam. Because by so doing, the tooth and adjacent parts are restored more nearly to their natural relations; because the gum and periodontal membrane are left comparatively undisturbed; because he thinks that usually the pulp is more likely to die under a crown, and under a mass of oxy-phosphate, than under a filling; because, should death of the pulp follow, it is easier to remove the filling than the crown for treatment, and because, should the filling after a time fail, crowning is still left as a last resource, and which event, he believes, has prolonged the usefulness of the tooth, by just as much as the final crowning has been deferred. In the anterior teeth, other conditions may supervene, that will make filling entirely inadmissible, and may even justify the destruction of the pulp. Amalgam is not available in many of these cases, and tedious operations in gold on frail teeth, in frail patients, even if not by frail operators, are barbarisms, exhausting alike to subject and object, and too often finally destructive of the tooth. Still, with the phosphates and gutta-percha, even these teeth may, with a little looking after, be often kept comfortable and presentable for a long time. Appearance is a weighty argument in favour of crowning these conspicuous teeth, but the good of the patient, the conservation of the natural organs, must be weightier considerations. Favour the natural crown, and the artificial still remains as a resource. For molars, there is, he recommends, the all metal crown. For bicuspids, when metal is indicated, he prefers platinum, as being much less conspicuous and more slightly. In strong pulpless bicuspid roots, the bite not too close, so as to allow the use of a large strong body of porcelain, he prefers the all porcelain crown of the Logan type, banded when the articulation, shape or condition of root calls for it, but preferably without, set with oxyphosphate. For the six anterior teeth, all good methods involve the destruction of the pulp. Platinum crowns with porcelain facings baked on them have been devised, as well as gold crowns with porcelain fronts soldered into them. But laying aside the question of the durability and the clumsiness, the pulps of incisors which are broken down so much as to need crowning, have already been deprived of so much protective material. In these cases, it is justifiable to depart from the rule, never to destroy a healthy pulp. The roots then being pulpless and strong, where other considerations do not forbid, he selects the Logan crown. Unless the root is quite strong, it is better to band it, because the long leverage, the direction of the force of occlusion, usually tends toward splitting the root. With a close bite and a short crown, a plate tooth soldered to a cap and band fitted over the root is stated to be preferable. Sometimes it may be advisable to crown several adjoining roots, one of which is so frail as almost to forbid the idea of crowning. Such roots may often be successfully crowned, and their usefulness be very materially prolonged, by soldering the crown of the frail root to the adjoining crown or crowns, and setting them in place together, thus strengthening the weak without very much adding to the burden of the strong.

MISTAKES.

By Wm. N. Morrison, D.D.S., St. Louis, Mo.

The writer remarks that persons with aching teeth who desire their extraction are pretty sure to lead the dentist into error. If you take his word, the mistake might make him a victim the remainder of his life. If you persuade him to have it properly treated and filled and promise to keep him free from pain with it as long as he is within your reach, you are pretty sure to err again. Or he will have a putrescent pulp ready drilled into, the day you are away. Other blunders one frequently falls into are: Cutting away too much tooth substance which should be left for natural wear or breakage. Cutting off weak crowns for more conspicuous metal substitutes. Drilling through the apical foramen for the treatment of abscess when we know there must ever after be an uncertainty about filling that canal. Excavating soft dentine too close to the pulp, cleaning out layer after layer because it cut seasily and gives no pain. Filling a cavity with one substance when another was more plainly demanded. To call a fistulous opening through the alveolus a dangerous cancer. He saturates the spongy dentine of cavities with creosote, the tubuli are entered by animalculi and enlarged until the whole structure is destroyed. It is very plain that with a few of these tubuli so enlarged directly to the pulp, capillary action by compression, or suction must be very direct. The too common mistake is to devitalize the pulp. Let us watch keenly our own as well as the mistakes of others, for there is a valuable lesson in every one.

TUMOURS OF THE PERIODONTAL MEMBRANE.

By W. H. Whitslar, D.D.S., M.D., Youngstown, O.

Tumours of the periodontal membrane occur more frequently than is usually supposed. Surrounded by the bony walls of the alveolus, a hiding place is thus found in which a tumour may exist for years and yet remain unknown to the patient; and this increases the difficulty of diagnosis. The etiology of tumours of the periodontal membrane may be classified. 1st, Traumatism direc . 2nd, Traumatism indirect, as of the death of the tooth pulp. Tumours of the periodontal membrane are composed of the same histological characters, and pursue the same clinical course as tumours elsewhere. Tumors of parts which are loosely textured and abundantly supplied with blood naturally grow more quickly than tumours which are poorly nourished and confined in narrow spaces. If the tumour be malignant, rapidity of growth is noticed earlier if situated in the lower jaw, because in the upper the entire Antrum of Highmore may become involved long before any positive outward indications are apparent. In this period of development the principal sign would be pain in the parts, though it may not be dissimilar to pain from other causes. We are, however, largely dependent upon the histological factors that resemble normal tissue — either embryonic or matured — for the distinctions that names afford us. Magitôt divided tumours of this kind into five classes, as follows: 1. Fibrous.—2. Fibro-plastic.—3. Epithelial—4. Tumours with multi-nucleated cells.—5. Tumours with Cytoblasts, *i.e.* single nucleus surrounded by protoplasm. Magitôt and Wedl seem to have been the only observers of giant cells and cytoblasts in the normal root membrane, and it would appear that tumours with such elements contained therein, may have pre-existed before the tumour was formed. Now, Magitôt made this classification from eighteen cases that M. Robin collected, and only one was of the Epithelial type—it was cancerous. Thirty years nearly have elapsed since this division was made, and all tumours of the carcinomatous kind are now recognised by pathologists to be of epithelial origin. This proves that it is impossible for true cancer to develope in any derivative of the mesoblastic layer of the blastoderm. Epithelium is developed from the epiblast and hypoblast, whilst the periodontal membrane comes from the mesoblast. Epithelial tumours do not arise, however, primarily in the root-membrane, but owe their presence to the contiguity of tissues. The first and second divisions now remain, and the point of difference between them is of histology, and not of malignancy. The fibrous are tumours consisting of fibrous tissue—chiefly white fibres. The yellow elastic fibres are rare. The cells are few in number, and like those of the normal fibrous tissue. The fibro-plastic forms are the spindle-celled sarcomata, which consists of cells mainly spindle-shaped and fusiform, separated by only a little homogeneous or slightly-fibrillated intercellular substance. To the fibrous form belong the membrane polypus. It is owing to the hypertrophic conditions of the periodontal membrane that polypi occur. Sometimes proturberances of the membrane escape the socket, and appear as small tumours at the margin of the gum, and may be mistaken for proliferations of the gum tissue, and be overlooked. Various tumours of the periodontal membrane (neuroma, augeioma, lymphona) occur in the deeper portions of the alveolus, and are found between the roots of molars and bicuspids. The symptoms of tumours of the periodontal membrane are generally like those of chronic inflammation, and are readily distinguished from acute inflammation, but the difficulty of proper diagnosis is in the obscurity of the disease. We must wait and watch developments.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Ordinary Monthly Meeting, April 1st, 1889. Mr. HENRY SEWILL, M.R.C.S., L.D.S., *President*, in the Chair.

The Minutes of the preceding meeting having been read and confirmed,

Mr. Sidney Spokes, M.R.C.S., L.D.S.Ed., of 59, Queen Anne Street, was balloted for and elected a Resident Member of the Society.

The Curator (Mr. Storer Bennett) announced that, through the kindness of Captain Lloyd, of the Somersetshire Regiment to whom they had been previously indebted, two specimens had been added to the collection of the Museum. The first was the skull of a black Indian bear, and the second a very interesting specimen of the skull of a Muntjac. As the Society would be aware, there were three kinds of deer—and only three—that have canine teeth, viz., the ordinary musk deer, the Chinese water deer, and the Muntjac, and these have no horns, the canine teeth taking the place of antlers. In the Muntjac they had an intermediate condition, largely developed canine teeth and also horns—a very curious condition, and one of which they possessed no previous specimens.

Mr. Walter H. Coffin : I think, Sir, I am correct in saying that the Wapiti of North America has its eye teeth rudimentary. The first settlers in America called it the Elk, the real American Elk being the Moose. These eye teeth are sometimes found afterwards by the natives, and are looked upon by them as something miraculous, passing as currency.

Mr. Storer Bennett : The Muntjac is also very peculiar in having the horn not growing from the bones of the skull as it usually does, but it has a long horny projection having a mass of true bone from which the horn springs.

The president : Messrs Ackery, F. J. Bennett, and Maggs undertook at our last meeting to examine microscopically Mr. Maggs' specimen ; the Society will be glad to receive their report.

Mr. F. J. Bennett: It will be remembered that it was suggested that the specimen you allude to might be a case of secondary dentine; however, Mr. Ackery and myself formed a slightly different opinion, viz., that it might be due to induplication of dentine itself, and a sub-committee were instructed to examine the specimen. This has been done, and I have been fortunate in duplicating the specimen. I have also made a drawing, which will be handed round, with Mr. Maggs' specimen and the duplicate. I have since looked at several specimens and found that they are not uncommon. They always appear to be second lower molar teeth, and the induplication is on the buccal surface. I think we may put this down as an induplication of dentine in a second lower molar tooth. I think, Sir, we are indebted to Mr. Maggs for bringing the case to our notice, as there are points about it which are worth while looking at.

The President then called upon Mr. Tomes for his communication. [see page, 509.]

The President read the notes of a case of Hyperostosis of the jaw. The said patient, a man aged 40, had been under care for ten years. My attention was for the first time drawn to him by the abnormal development of the lower jaw. It has always presented the peculiarities, although I believe in a minor degree, which are now observable. I at first regarded it as an exaggerated case of under-hung jaw, having ascertained there was no history of injury to account for it. The deformity consists in the great size of the bone, and apparently undue length of the ramus, whereby the lower jaw is protruded and cannot be brought into apposition with the upper. It affects the body of the jaw only, the alveolar border being natural in size, and the enlargement is almost perfectly symmetrical.

The patient states that so long as he can remember he has been under-hung. He has not noticed any increase in size of the jaw. It, however, seems to me decidedly bigger than at first, and the patient, seeing it daily, might not be so good a judge of this as one who saw it only at long intervals.

He states that the jaw is much more tender than it used to be, and gives slight pain when pressed, and sometimes the pain increases.

The molars, except one, in the upper jaw have been gradually lost through wasting of the sockets; the rest of the teeth—some of them filled—remain. At the patients' repeated urgent request, after at first refusing, I have provided him with artificial teeth to fill the gaps; although I fully explained that they would be probably useless in consequence of his inability to bring the jaws together. He, however, had a piece made in the country from which he stated he got some use; and on his losing some more teeth I made the plates which he now wears. I should be glad to have any suggestion as to the construction of an apparatus which might serve effectually in mastication.

Mr. Jonathan Hutchinson, remarking upon the case, said the evidence as to whether the jaw was increasing in size or not seemed to be a little doubtful. The jaw was somewhat tender, which suggested that it was increasing. He was specially interested in the case in connection with the new disease acromegaly, in which all the bones of the head, of the digits, and of the toes increase in size. He had a patient suffering from acromegaly, whose jaws are very large—much larger than natural; the digits were quite twice their natural size. Then with reference to the case he thought at first the patient's head looked large, but he has no tenderness of the skull bones; if he had, that would point to the possibility of its being acromegaly. He thought also the jaw is first affected. The question seems to be whether it is a case of congenital malformation, or if progressive, it was probably a case of acromegaly, and the patient might experience some increase in the size of the head later on.

Mr. C. S. Tomes: There is just one point which throws a little light on the case, though not much; the patient told me that, when a child, an attempt was made to correct the deformity by means of an inclined plane. I think if the lower jaw had projected as much as it does now, the most sanguine practitioner would hardly have entertained any hope of remedy by such means. Mr. Christopher Heath had rather a curious case in which the articulation of the jaw was thrown out on one side by the overgrowth of the jaw, and the hypertrophy was confined to the jaw. It was not symmetrical, and by incising the condyle of the jaw, the patient's articulation was restored.

The President then called upon Mr. Jonathan Hutchinson, F.R.S., for his Paper on "A Surgeon's Notes on certain Diseases and Malformations of the Teeth." [See page 461] when the following discussion took place.

DISCUSSION ON MR. HUTCHINSON'S PAPER.

THE PRESIDENT : It would be wrong to pass over Mr. Hutchinson's paper without specially thanking him on behalf of the Society for coming here to read it ; for the valuable contribution to our Transactions, and to scientific literature. Much as we know he dislikes compliments, it would be wrong not to express the feelings which we in common with the profession entertain with regard to his work. Mr. Hutchinson is one of the men who now uphold the high standard of surgery. He observes and records with great care ; nearly every observation he has made has been accurate, and will tend to the advance of our knowledge. The only point in his paper in which I should be disposed to disagree with him, is on erosion, that the "toothbrush-grooves" are not necessarily caused by the toothbrush. The question of amalgam stoppings Mr. Hutchinson mentioned to me many years ago. I then told him I had never seen cases of the kind which he has described, nor could I form any theory which would account for them. With reference to Riggs' disease, Mr. Hutchinson has thrown some light upon a matter upon which our knowledge has been very imperfect. With regard to syphilitic teeth, I have seen a vast number of children with syphilitic history, who had nothing wrong with their teeth.

MR. CHARTERS WHITE : I have listened, Sir, with a great deal of pleasure and interest to Mr. Hutchinson's Paper, and I am sure that it has been a very suggestive one, and when we have the opportunity of reading it we shall all profit by it. There is one thing with regard to Riggs' disease which I have noticed ; it has always struck me that the disease has been accompanied by the falling off of the hair. I have always asked patients and have found it almost always so.

MR. C. S. TOMES : Mr. Hutchinson has given us such an amount of material from his wealth of observation that it seems to me difficult to know what particular part to take up ; there is such an infinity of points that it is difficult to make a selection. But there is one thing to which I should like to draw Mr. Hutchinson's attention, viz., an argument against the contagiousness of what we call Riggs' disease. It is very common to find that it attacks the mouth symmetrically. That, so far as it goes, would seem to point to some connection of the disease with what one vaguely calls constitutional causes. On the other hand, where you have one or two badly affected teeth, the best thing you can do is to take out the very bad ones and treat the others. And then again, the measure of success which attended Dr. Riggs' treatment—which I think is very rarely carried out as he would carry it out—consisted in a very severe scraping which put his patients to a great deal of suffering. He would point out how very bad the cases were, and certainly very great advantage resulted from this thorough scraping away at the margins of the alveolus, but there I think it ended. I have never known a case of Riggs' disease in my own experience successfully treated. I have known cases which have been supposed to have been successfully treated, but they always recurred ; but that perhaps is not wonderful, because without the extraction of the teeth and the treatment of the socket the treatment could hardly be thorough.

Mr. F. Newland-Pedley : I think, Sir, it would be very serious if Mr. Hutchinson's remarks on the subject of amalgams were to go forth to the profession without being called in question. I do not think that any general condemnation of amalgams would be warranted, nor do I hold, speaking generally, that the effects referred to are due to the quality of amalgams ; a great many old amalgam stoppings become sharp at the edges, and these are the cases where we have ulceration of the tongue. I should be inclined to agree with Mr. Hutchinson that Sullivan's amalgam would be more likely to produce ulceration than any other, because it is very soft, and after a time has a very knife-like edge. When amalgam fillings are properly finished off and polished, they are not likely to cause soreness of the tongue or gums.

Mr. Storer Bennett: I think, Sir, that Mr. Newland-Pedley's remarks are extremely valuable. I cordially agree with him that it should not go abroad in the Transactions of the Society that amalgam fillings *per se* are liable to produce ulceration. I do not wish for one moment to impugn Mr. Hutchinson's observations, but I am sure that he will admit that we as dentists see many more amalgam fillings that have been in a number of years, than could possibly fall to his lot, and I think it is the experience of dentists that amalgam fillings may remain many years without injurious results to the tongue or mouth. With reference to the subject of Riggs' disease, Mr. Hutchinson's observations with regard to the hair, point to the fact that the patients are not suffering from constitutional debility, but I think it is the experience of dentists that those who are suffering from Riggs' disease are generally run down, and there is constitutional depression in most of them. It may be interesting to members of the Society, or to Mr. Hutchinson, to know that a great many animals closely confined, or imprisoned, suffer from Riggs' disease : in many cases, where the history has been known, debility has been present. I think, therefore, in this disease the constitutional condition is generally a lowered one.

Mr. Moore (Croydon) : I had, Sir, a case which came under my notice a few years ago. It was that of a lady thirty years of age, very regular in her habits, perfectly healthy in every respect, no loss of hair, good colour, good physique, but she had Riggs' disease in both upper and lower jaws, so much so that at thirty years of age the teeth were all loose and coated with nodules of tartar ; there was no offensive smell. I removed the whole of the upper and under teeth, and now the gums are perfectly well.

Dr. G. Cunningham : I should like, Sir, to bring forward a photograph which has some bearing upon the remarks made by Mr. Hutchinson at the close of his paper. It shows the necessity—not only in amalgam stopping—of a joint inspection by the medical man and the dentist. Mr. Hutchinson referred to the teeth being worn down by the use of a pipe, stating that it might be an index as to the character of the tooth substance. I think, as a rule, it shows rather the quality of the pipe than of the teeth. I have observed that the worst cases of wearing of the teeth from pipe-smoking have been produced by the common clay.

Mr. Walter H. Coffin : I only rise, Sir, because I understood a most distinguished member of the Society to commit himself to the incurability of Riggs' disease. I should like to say that I have known a number of cases of young patients—from twenty-five to thirty—cured. It is open to any one to say that as the conditions were cured it was not Riggs' disease, but all the characteristic appearances of the disease had been present. In cases of more advanced age I have seen every symptom pass away, but recur. I have had occasion to collect much that has been written on the subject, and I may assure Mr. Hutchinson that no constitutional treatment has been known to arrest the disease, and there is no evidence of a constitutional cause. In reference to Mr. Storer Bennett's remarks about depressed vitality existing in cases of Riggs' disease, the admitted innutrition of the parts affected has an interesting bearing upon constitutional causes. It is perhaps going beyond the mere question of pathology to speak of the treatment of Riggs' disease, but as I have spoken of what I consider to be cases of cure in young subjects, it would be unfair not to say that the treatment was entirely local, not merely mechanical (such as Dr. Riggs' treatment), nor entirely antiseptic, because combined with stimulating caustics.

Mr. Jonathan Hutchinson, replying, said: I desire to thank the members generally for the very kind criticisms of my crude statements. With reference to Riggs' disease, I should have very much liked to have more information on the point of constitutional proclivity, but there seems to be some difference of opinion. I understood one speaker to say that in all cases the patients were feeble, but I repeat what I have said, that I have very often found it in otherwise healthy persons. I was under the impression that it was *generally* seen in persons in good health and middle age. I have seen patients who have lost all their teeth, and are presumably perfectly well. One speaker remarked about animals. He seemed to think it occurred only in unhealthy animals, but I have seen the case of a sheep-dog which has lost all its teeth; this was an animal not in confinement, and in good health. In these circumstances we could only explain it on the theory of contagion. Mr. Tomes certainly hit a point when he referred to the symmetrical character of the attacks: there are symmetrical forms of skin disease in which exactly the opposite part is attacked—that is a peculiar proclivity. Contagion never produces sore mouth, it only produces alveolar suppuration. I should be very sorry, Sir, if I were to be understood to attack the use of amalgams generally. I did not intend anything of the sort. I am quite aware that a large number of amalgams are used to the great advantage of patients. All I wished to draw attention to was that there are cases where, from the peculiar condition of the saliva and the colour of the teeth, it must be inferred that the effect is the result of the chemical action. I am well accustomed to examine teeth for mechanical defects, and sometimes I have been unable to detect any. So strong is my belief that sore mouth is often produced by the teeth, that I always look at the teeth where there is no history of syphilis. I am frequently sending my patients to have their amalgam stoppings taken out.

STUDENTS' SOCIETY.
NATIONAL DENTAL HOSPITAL.

The Ordinary Monthly Meeting of this Society was held on Friday, May 3rd, at 8 o'clock p.m. SIDNEY SPOKES, Esq., *President*, in the Chair.

The minutes of the previous meeting were read and confirmed.

Miss Day was elected a member of the Society.

Casual Communications :—Mr. Clark shewed a model of a left upper 1st bicuspid root, in which the nerve was still alive and aching. As patient objected to having it destroyed by taking gas, and killing it with a barb, Mr. Clark fitted a German silver collar round the root, and applied Baldock's paste. The treatment was successful.

Mr. T. G. Read mentioned a similar case.

Mr. Fisk showed a curious left lower wisdom tooth, which had seven cusps, one of which was more than $\frac{1}{8}$-inch in height, and was curved backwards like the horn of a rhinoceros. Mr. Fisk also mentioned the case of a patient who complained of partial loss of sensation on the left side of the tongue and gums. One tooth only, a molar, was, or had been, standing on this side, but the crown had been broken off by another dentist. Mr. Fisk removed the roots, and sensation returned within five minutes. Roots shewed slight absorption, and the apical foramina were exceedingly large.

The President called upon Mr. Allnutt for his Paper, on "Anæsthetics," which proved to be of a very interesting nature.

A discussion on the Paper then took place, in which Messrs. Humby, T. G. Read, Fisk, Clark, and the President took part.

After which Mr. Allnutt replied to the various gentlemen, and a hearty vote of thanks was accorded to him.

The meeting then adjourned till Friday, June 7th, when Mr. Fisk will read a Paper on "Dental Education."

THE STUDENTS' SOCIETY OF THE VICTORIA DENTAL HOSPITAL OF MANCHESTER.

The 4th Annual Meeting of the above Society was held on Tuesday Evening, May 28th.

Mr. William Headridge (Vice President) in the chair. In his opening remarks he regretted the unavoidable absence of the President (Mr. Leopold Dreschfeld) through indisposition.

The minutes of the previous meeting were read and confirmed.

The following gentlemen were admitted as members :

Messrs. Headridge, Hooton, Sibson, and Sykes.

On Casual Communications being called for Mr. H. C. Smale exhibited a lower denture to which an enormous mass of tartar was adherent. The denture had been in the mouth four years without removal.

Mr. Smithard showed a model illustrating an underhung bite, resulting from the after effects of diphtheria, which the patient suffered from when three years of age.

Mr. Linnell showed models of immediate torsion he had treated satisfactorily.

Mr. Birkett exhibited two teeth ; one an upper molar showed a marked case of exostosis, the other an excessively stunted 1st lower premolar.

The Report of the Council which was read by the Secretary showed an appreciable improvement in the work of the Society on the previous Session.

The Treasurer, Mr. C. H. Smale, in his Report showed a balance to the Credit of the Society of £18 5s 10d.

The following gentlemen were elected as Officers for the ensuing session.

President, Mr. L. Dreschfeld (re-elected.)

Vice-Presidents, Messrs. Headridge, Smale, Smithard, and Campion.

Secretary, Mr. W. Birkett, (re-elected.)

Treasurer, Mr. D. Headridge.

Councillors, Messrs. Carrington, Walker, and Gibson.

The Chairman announced that Mr. Smithard had presented a Medical Directory to the Society.

Votes of thanks to the Chairman, Retiring Officers and to the gentlemen who had brought forward Casual Communications brought an interesting meeting to a close.

Dental News.

EXETER DENTAL HOSPITAL.

Subscribers to the Exeter Dental Hospital held their annual meeting recently.

Mr. W. H. Ellis (President of the Institution), said this was a charity about which there could be no mistake. They could not go wrong in relieving the sufferings of their fellow men. As we became more civilised, toothache became more prevalent, and we required the aid of the dentist. Dentistry was an old science, and that of stopping teeth dated from the Romans. Formerly, however, it was only the wealthy classes who could afford to employ the dentist, but now, thanks to this Institution, the poorest classes at Exeter could have their teeth attended to and obtain the same benefits as the rich.

The report of the medical Sub-Committee shewed that during the year, 2,752 patients were treated, as compared with 3,863 the previous year, and 4,539 operations performed. A decrease in the number of patients, chiefly in the extracting and miscellaneous advice cases was attributable to the change of premises.

The treasurer's account shewed an increased income of £37 16s., and the expenditure had been more by £36 17s., mainly accounted for by a payment of £35 towards the expenses of removal to and fitting up the new premises. The hospital was £45 8s. in debt.

The report was adopted, and on the motion of the Mayor (Ald. Peters), Mr. W. Horton Ellis was re-elected president. Messrs. G. Feanklin and W. S. Mortimer were re-elected auditors.

APPOINTMENT.

Rilot, C. F., L.R.C.P., Lond., M.R.C.S., and L.D.S., Eng., appointed Dental Surgeon to the North West London Hospital, Vice W. R. Maggs, M.R.C.S., L.R.C.P., L.D.S., resigned.

OBITUARY.

We have to announce with regret the early decease of Mr. Henry Picton, L.D.S., Eng., who died from phthisis at Alexandria, Egypt, on 19th of May last, at the early age of twenty-six. Mr. Picton's early studies were prosecuted at Alexandria and Cario. In 1885 he entered the Dental Hospital of London, and in 1887 obtained his diploma and certificate of honour in the competition for the operating prize.

All will feel deep sympathy for Mr. Picton's relatives who are left to lament the untimely decease which has terminated too soon his professional career.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

ADVERTISING.

To the Editor of the "British Journal of Dental Science."

Sir,—Truth sometimes surpasses fiction for boldness and imprudence. Dentists are protected by law. They organized, and asked to be protected from men that had no Dental education,—men that traded upon the ignorance of the people—men that could puff themselves into notices without any knowledge of Dentistry.

Many of these advertisers succeeded in finding some one to vouch for them being in practice before the passing of the Dental Act.

The same gentlemen found advertising paid before they were registered, and they continue the same practice to this day. Blackburn. Preston and Accrington are notorious for advertising dentists.

One cannot enter a tram-car between Accrington and Cochurch, Accrington and Colaton le Mare, Accrington and Baxinden but finds on the windows of the cars the name of a well-known firm of advertising Dentists. In Accrington I find all but one of the Dentists advertise.

There are many Dentists to whom I can bear witness have unregistered men conducting practices for them ; that is to say, the registered advertisers are breaking the law by utting unqualified men in the place of qualified ones.

Men are taken from the loom, or the anvil by the registered advertisers, and are covered by the registered names of the Dentists that employ them.

The "Covered" Dentist finds an opening, or he fancies he has found one.

He leaves the registered one, and starts business for himself, hence so many such are at work in Manchester, Wigan, Preston, Blackburn, and Great Harwood.

Men who call themselves gentlemen are guilty of such abominable conduct. I have closely watched the puffing fraternity, scarcely one amongst them are competent to perform one-half of what the bold, bare-face advertisements set forth.

Did these gentlemen pay so much attention to the profession they profess to understand, thereby learning to do good work, it would be far better for them and the public who are deceived by their advertisements. Here is a sample of one vulgar puffer. "Persons desirous of obtaining artificial teeth on easy terms could not do better than enter (join) the Artificial Teeth Club. Ful share £1. Weekly payments 1s. Half share 10s, payments 6d"

Enclose I send advertisement for proof. There is in Wigan a very cunning advertiser, he advertises with the American Match box. It is about 14 inches long 3½ wide is hung up in public houses. All the tram cars are ornamented with the name of this advertiser. I will give his name if wanted.

All this is bad enough, but there is worse behind. Report, that noisy little bird, keeps singing that there are dentists practising in dead men's names. That little bird sings two in Rochdale, one in Bolton. If this report is true it is time the local registers of those towns were looked up. Upon one occasion talking to a dentist whom I have known for twenty years I said you will have to send your son to College. The reply came quickly, showing he had studied this subject, "Not I, he can practice in my name; his name is the same a mine." "When you die you will be reported dead and taken off the register." He replied "I know how it is to be done." "How?" I asked. "I'll have registered the son instead of me.

The local registers of each town ought to be examined and these men practising in dead men's names stopped from so doing.

The Medical Council has the power by one bye-law to make advertising an unprofessional act and stamp out the disgrace that is continually outraging the profession.

By making bye-laws the Medical Council can stop a registered dentist from covering an unregistered person with the registered name. One vigorous and determined act of the Council would stamp out both advertisers and covered men.

I am willing to give a sovereign a year to aid in removing trash out of the way.

Your obedient servant,

"CHARLES AUDLEY."

SOME METHODS OF "CROWNING" USING ENGLISH TEETH.

To the Editor of the "British Journal of Dental Science."

SIR,—Having read in your issue for March 1st, a paper by Mr. Thomas G. Read upon the above subject, I should like to ask a question. Mr. Read says, "a chronic abscess, in connection with a broken down tooth, which shows no tendency to yield to treatment by dressing. &c., will often rapidly disperse where the stump is properly crowned and bitten on, the cause of irritation having been non-use." It will afford me much interest if Mr. Read will go more deeply into the above extract, giving statistics of his results, etc., shewing the rationale of the "cure." I must admit that the above is entirely new to me. All dentists I think, will agree with me, that these "chronic abscesses connected with broken-down old roots are most troublesome to treat, and I must confess up to now, quite ninety-five per cent. I have extracted as a *dernier resort*. I should have thought it almost impracticable to fit a "crown" properly to these diseased roots, so that if Mr. Read will kindly inform me how the cure takes place,—viz. the abscess, and decomposing matter in the old root canal becomes absorbed,—many dentists would feel most grateful to him, like

Yours truly,

JAMES RYMER.

Hospital Reports.

MONTHLY STATEMENT of operations performed at the Dental Hospital of London, Leicester Square, from May 1st to May 31st, 1889:—

Extractions	Adults	1295
	Children under 14	419
	Under Gas	1110
Stoppings	Gold	410
	Plastic	1390
Advice		221
Irregularities of the Teeth		49
Scaling, Pivots, and Dressings		298
	Total	5192

J. P. SMITH,
T. E. CONSTANT,
A. H. SMITH, } *House Surgeons.*

Statement of operations performed at the National Dental Hospital, from May 1st to May 31st, 1889:—

Number of patients attended		2754
Extractions	Children under 14	329
	Adults	519
	Under Nitrous Oxide	958
Gold Stoppings		211
Other Stoppings		499
Advice and Scaling		394
Irregularities		102
Miscellaneous		139
Total		3151

E. C. Fisk,
G. M. Keevil, } *House Surgeons.*

Work done at the Victoria Dental Hospital of Manchester during the month of May 1889:—

Number of Patients attended		1076
Extractions	Children under 14	777
	Adults	
	Under Nitrous Oxide	115
Gold Stoppings		52
Other Stoppings		76
Miscellaneous		342
Total		1362

P. A. Linnell, *House Surgeon.*

H.R.Abbott
Mem. Lib.

Author

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